THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XVI. No. 371—19th YEAR.] LONDON, JANUARY 8, 1867. [Subscription per Ann. { 15s. in Advance / 18s. Credit } Price 8d. Unstamped.

RAMSAY'S NEWCASTLE CANNEL COAL. Analysis by Dr. FYFE, M.D.:—
9746 cubic feet of gas per ton of coal.
26-candle gas.
13¼ cwt. coke per ton of coal.
N.B.—Ramsay's Cannel most resembles the Marquis of Lothian's Cannel, but superior as to coke.
RAMSAY'S PATENT CONDENSED COKE,
DO. GARESFIELD COKE.

RAMSAY'S FIRE-CLAY ARTICLES.
GAS-RETORTS, introduced 1828.
FIRE-BRICK WORKS, established 1804.
FIRE-CLAY SANITARY PIPES, CHIMNEY-TOPS, and all Goods made of Fire Clay.
The Fire Clay is worked from Blaydon Main Colliery, is of excellent quality, and no expense spared in perfecting every article.
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GEORGE GLOVER & CO.,
Patentees of the Standard Gasometers for the Government, and of the
IMPROVED DRY GAS-METERS.
These Meters are warranted to measure correctly and not to vary, and have come into general use more rapidly than any Meters hitherto manufactured.
1862.
CLASSES X. AND XXXI.
CLASS X.—"*For ingenuity, completeness, and efficiency of apparatus used in measuring gas, and for excellence of material and workmanship.*"
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Ample experience has proved that, by carburetting common gas, its illuminating power may be doubled or even tripled, and its consumpt greatly lessened. Wax candles and oil lamps in consequence are being rapidly superseded, and gas is now used in many private houses and mansions where formerly it was not tolerated.
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COWEN'S PATENT FIRE-CLAY RETORTS.
JOSEPH COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,
Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS RETORTS and OTHER OBJECTS in FIRE-CLAY," and they have also been awarded in the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for "GAS RETORTS, FIRE-BRICKS, &c., for EXCELLENCE of QUALITY."
J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts in the United Kingdom; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire-Bricks, and every other article in Fire-Clay are promptly executed at their Works as above.
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ALMA WORKS,
WALSALL, STAFFORDSHIRE;
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Gun Metal, and all other kinds of Cocks, Stocks, Dies, and Taps, Galvanised Tubes, &c.
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AND
STREET-LAMP
MANUFACTURERS,
BELL BARN ROAD, BIRMINGHAM.
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METAL AND GLASS CHANDELIERS, &c.,
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FOR GAS STEAM, AND WATER;
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ALL WARRANTED.

GEORGE GLOVER & CO.'S
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The advantages of these Meters are best appreciated by a consideration of the evils they avert. The more prominent of these evils are the following:—

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2. Jumping of the lights, and their sudden extinction.
3. Escapes of gas through the plugs being left out, or imperfectly secured, when the Wet Meter has been replenished with water.
4. The gas passing without being registered at all.
5. The temptations and facilities to fraud which it is notorious the Wet Meter presents.

1862.

CLASSES X. & XXXI.

6. The damage to house property which the impracticable attempt to keep the lights from jumping, by giving all the pipes a gradual ascent from the Meter, so as to admit of the water trickling back into it, necessarily occasions.
7. The waste of gas from the higher pressure required to work Wet Meters, the possibility of the water freezing, and their axles and moving parts becoming corroded.

These faults, characteristic of the Wet Meter, and fruitful in annoyance, interruption to business, pecuniary loss, and danger, are entirely averted by the use of George Glover and Co.'s Patent Dry Gas-Meter.
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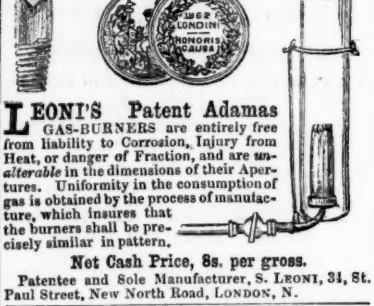

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Price-lists and tenders for gas-meters, experimental station-meters, experimental holders, governors, purifiers, gasholders, pressure-gauges, gas and water fittings, &c., are forwarded on application.

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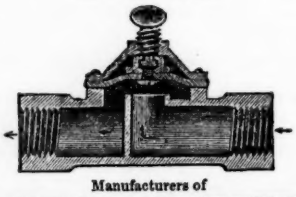

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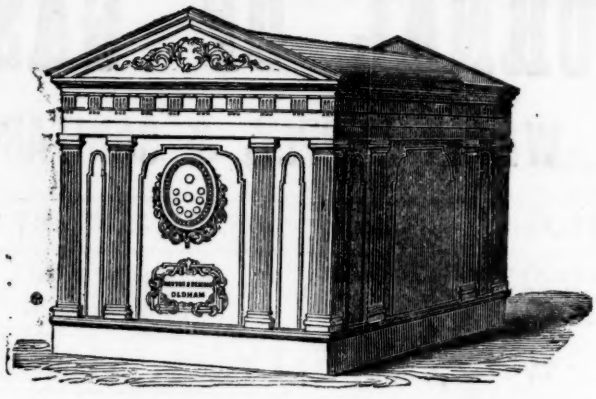

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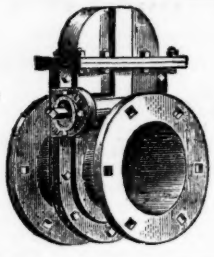

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Containing no Lime, and only ·45 of Oxides, resist the strongest heats, and will last for Gas-Works longer than any others.

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(Successors to CROLL, RAIT, and CO., LONDON, and WEST and GREGSON, OLDHAM.)

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ALSO THE

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Which is very durable, and, from its simplicity in construction, can be repaired by any meter repairer or fitter. The greatest care is taken in selecting and preparing the leather for the diaphragms; also in mixing the metals for the valves.

☞ *See "Practical Mechanic's Journal," Dec. 1, 1865; also, p. 711 "Journal of Gas Lighting," Sept. 18, 1866.*

TO CORPORATIONS, GAS ENGINEERS, AND OTHERS.

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These Meters are protected by registration under the "Copyright of Designs Act." They are much more durable, and at the same time more easily repaired than those in Tin Cases.

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ANOTHER

MEDAL AWARDED BY THE JURY, INTERNATIONAL EXHIBITION,

1862,

To THOMAS GLOVER,

SUFFOLK STREET, CLERKENWELL GREEN, LONDON.

THOMAS GLOVER has great pleasure in informing Gas Companies and his other Patrons, that the *Jury of Class XXXI. of the International Exhibition of* 1862 have awarded, for his Patent Dry Gas-Meter, *a Prize Medal.* The reason given for this Award, in the Juries Official Report, is, "*For excellence of manufacture, as regards Dry Meters.*" See Official Report, p. 346.

It is worthy of remark, that the only two other Firms who receive Awards *both manufacture imitations of Thomas Glover's* Patent Dry Gas-Meter, and the reason given for these Awards is "*construction* and sound workmanship." Thomas Glover, therefore, claims that the *construction* of his Meter has obtained *three Awards from the Jury of the International Exhibition of* 1862; at the same time, *contrasting* the Award granted for his Meter by the words, "*For excellence of manufacture, as regards Dry-Meters.*"

The Prize Meter was exhibited in Class XXXI., No. 6301, connected with a 1-foot holder, to demonstrate that a 50-light Meter *measures and indicates accurately the small quantity of One Foot.*

WILLIAM PARKINSON AND CO.

(SUCCESSORS TO SAMUEL CROSLEY),

PATENT WET AND DRY GAS-METER MANUFACTURERS, &c.

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Established 1816.

PATENT IMPROVED WET METER.

W. P. and Co. invite especial attention to this Meter, which entirely overcomes the difficulty to which ordinary Wet Meters are subjected, owing to the short range of the Float, which is necessary, in order to meet the requirements of the Sale of Gas Act.

"It is well known that n Meters constructed so that the valve will close when the water is drawn off to such a point as to render them 3 per cent. slow the lights are liable to be extinguished by the closing of the valve by a sudden increase of pressure. To meet this difficulty, Mr. Pinchbeck has invented an ingenious and simple arrangement by which the action is reversed, and any such increase of pressure, in his Meter, raises the value instead of depressing it. The fact of the improvement having been adopted by Messrs. W. Parkinson and Co. is a sufficient guarantee that it practically and effectually remedies the inconvenience it is designed to meet."—JOURNAL OF GAS LIGHTING.

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STATION-METERS AND GOVERNORS.

Which can be seen at all the London Gas-Works. Also Liverpool, Manchester, Sheffield, Nottingham, Belfast, Glasgow, Birmingham, Dublin, Bristol, Leeds, Leicester, Brighton, Southampton, Sunderland, Wolverhampton, Bradford, Norwich, &c., &c.

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CONTENTS.

	PAGE
Notes upon Passing Events:—	
The Financial Crisis of 1866	5
The *Pall Mall Gazette* on Trades Unions	5
"Metropolitan Gas Legislation Past and Prospective"	6
The Fire at the Crystal Palace	6
Lord Dufferin on Irish Grievances	7
French and Belgian Peasantry	7
Circular to Gas Companies:—	
The Present Position of the Metropolitan Gas Question	7
The Writer "with a Free Pen" in the *Worcestershire Chronicle*	9
The Saville House Fire—*Ward v. The Gaslight and Coke Company.*	9
The Gas Bills of 1867	9
Inauguration of Sixteen-Candle Gas in Dublin	9
Register of New Patents:—	
Applications for Letters Patent	9
Notices to Proceed	10
Legal Intelligence:—	
Court of Exchequer—Ward *v.* The Gaslight and Coke Company	10
Miscellaneous News:—	
Meeting of the Pará Gas Company	14
Meeting of the Ratcliff Gas Company	15
Ottoman Gas Company	15
Suggestions for Amendment in the Metropolis Gas Act, 1860	16
Return by the Metropolitan Association of Medical Officers of Health of the Composition and Quality of the Metropolitan Waters, in December, 1866.	16
Professor Frankland's Analysis of the Metropolitan Waters, for December, 1866.	17
The St. Olave's Board and the Surrey Consumers Gas Company	17
A Gas Consumer convicted of Defrauding a Gas Company	17
The Water Supply of Towns	17
Share List of Metropolitan Gas Companies	18
Price Current	18

TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion, must be authenticated by the name and address of the writer; not necessarily for publication, but as a guarantee of good faith.

NOTICES.

Subscribers who have not paid their subscriptions for the year 1866, or for any previous years, are requested to remit the same forthwith in the manner indicated below, in order to prevent any interruption in the regular delivery of the JOURNAL; and such subscribers as desire to avail themselves of the reduction in the subscription by paying in advance, must do so in the course of the month of January.

The subscription is 15s. per annum, if paid in advance during the month of January, or 18s. credit, in two sums of 9s. each, in July and January of each year. Post-Office orders must be made payable at the Charing Cross Money-Order Office, to William H. Bennett, No. 42, Parliament Street, Westminster.

The next number will be published on Tuesday, January 22, and the subsequent numbers on each successive alternate Tuesday.

This JOURNAL has been duly registered at the General Post Office for transmission abroad.

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All Communications to be addressed to the Editor, No. 42, Parliament Street, Westminster; and orders for Advertisements to the Publisher, Mr. W. B. King, No. 11, Bolt Court, Fleet Street.

THE JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, JANUARY 8, 1867.

Notes upon Passing Events.

THE year 1866 will be memorable in England more for financial crashes and the great financial panic than any very satisfactory event. The year leaves little to console us for the losses that have been endured, except negative gains. We have found out Overend and Gurney, and seen the close of a firm which in its magnificent patronage rivalled the merchant princes of Florence, Venice, and Genoa. We have seen banks collapse like torn balloons, and we have seen those gigantic pawnbroking establishments, financial companies, "thaw and "dissolve into a *do;*" but we have nothing solid left to commemorate the investments of the year—no railway, no great dock, no palatial street, no monument of the credit which ended in 1866, unless we except the London, Chatham, and Dover's Metropolitan Extensions. Other periods of over-gorged credit have left behind them permanent marks in foreign commerce—great lines of steam communication opened by sea and land, and the development of public works of a very useful if not of a very remunerative character. To financial manias we owe the departing glories of the Thames Tunnel—the grand and unprofitable Waterloo Bridge—the shilling pleasures of the Crystal Palace. To money manias we, in London, owe the competition of Midland collieries: the name of George Hudson will never be forgotten when the new railway station, stupendous in Gilbert Scott's architectural glories, opens its hospitable gates in St. Pancras. No one but the pertinacious idiots of the paper-money school expects that the world—we mean the money-making world—will ever learn experience from this last or any other financial agony. About every ten years there is a plethora of accumulated savings; then clever adventurers, with tempting schemes, rise like will-o'-the-wisps from marshes on a summer's evening. The crops of fools, and of wise careful men in other particulars, are never wanting, and projects are always manufactured to fit the favourite credulity of the hour. 1825 was followed by 1835; then came 1846, 1856, and the crowning glory of 1866—the maddest mania of all. In 1825 we saw reaction after the long check of continental wars, and then the schemes whose site was most distant were the most in favour; but, after making a large deduction for projects which were merely the supply of the demand for subjects of speculation, 1825 left a good many solid monuments in useful undertakings in this country, in the United States, and in South America, where the seeds of a profitable commerce were sown. The chief speculations of 1836 were in railroads and banks, and those who have held their railway shares for thirty years have not had much reason to regret their confidence. In 1846 nearly all the faith in subscriptions to railway schemes was exhausted, and the two succeeding manias and panics have been managed by agents and companies. It was certainly comic to see grave and reverend seigniors, who would on no account subscribe to a railway or a dock, putting their money in companies whose secret managers had the right to invest it in any way they pleased. Not a shilling could have been raised to rebuild the Strand or to finish Victoria Street, but somehow money was found to rebuild Turin and Milan, and to found a new city alongside Marseilles. Peter Pindar has a couplet on some religious quack—

> Good people, give your money at the door,
> And if I like I'll give it to the poor.

The financial companies asked and got even more faith, for they obtained millions to be laid out as was most agreeable and profitable to two or three personages—managers or directors, as the case might be—often obscurities who had never before handled an honest thousand pounds. What wonder was it that banks fell to a discount or came to grief when we find out the sort of persons who founded, or rather manufactured them. We might safely paraphrase an old political story, and call on our sons to "See with how little wisdom or honesty great moneyed undertakings were governed" in 1866. Not the least curious feature of the money manias is that, in the midst of them, ordinarily near, close, and cautious men of business become the most rash and confiding. Men who have been saving and investing in Consols, or other equally safe and slow securities, all their lives, suddenly take "headers" into financial bubbles; men who would not lend a hundred pounds without enormous documentary precautions, enter into schemes for making money in some unknown manner by some unknown person—for that is the only true translation of investments in financial companies by shareholders who are not also directors.

Trades unions are beginning to attract a degree of attention amongst politicians which they have never before attained. The *Pall Mall Gazette* has given an article to the subject, taking as its text the points of our "Notes" on the Geneva conference. The attention that is being called to the most important subject of English social and political economy will exercise a serious influence on the debates on the next Reform Bill. The laws of England cannot put down trades unions—no law could be passed that would. No talking, no writing, no discussion amongst the white-handed classes (who for the most part work just as hard as mechanics), will have any effect on the determinations of Messrs. Potter, Cremer, Odgers, and Co. to make war on capital. Nothing but experience will teach the working men of England the *useful* limit of their combinations; and we must all pay for this experience. We have often been called upon to observe the contrast that England presents in its gayest resorts between the rich and the poor

(a contrast chiefly caused by the mildness of our police laws, the liberty that every English subject enjoys of going anywhere, in any rags or dirt, without being liable to interference); but, at the present moment, there is a much more extraordinary contrast presented by workmen earning very high wages and other workmen of the same trades who are paupers, because not allowed to work at wages which would have been considered excellent ten years ago, but which are below the minimum fixed by the trades union. According to trades union rules, half a loaf is *not* better than no bread. To explain this curiosity of tyranny created by the universal suffrage of trades unions, we will take a recent instance. A man of great talent for arrangement and organization, but of limited capital, and who probably does not spend more on his household than most first-class mechanics, took a contract for fitting up one of the London places of amusement for a new entertainment, which required the services of rough carpenters rather than of finished mechanics. As the weather throws an immense majority of the building trade out of work in the winter months, unemployed rough carpenters are plentiful, and six or seven hundred men, including labourers, were soon at work. Before the contract was completed the trades union authorities began to interfere—a few victims were first driven away, and, under what Mr. Potter would call favourable circumstances, a serious delay would have taken place in the opening day of an entertainment which gives employment and bread, directly or indirectly, to two or three thousand men, women, and children. But, in the first place, there are many rough carpenters not members of the union, because merely improved labourers; and, in the second place, the building was so situated that three policemen could hold a pass, and cut off intermeddling pickets of conspirators more easily than a hundred in ordinary buildings. When at length a strike was organized, it was too late—the discontented were paid off, and forty or fifty non-unionists and labourers triumphantly finished the job. Now, let us ask the *Morning Star*, and other organs of social tyranny, what are the advantages of a system which prevents workmen from earning £1 15s. a week for fifty-six hours labour in the dead season of winter under cover, when other work is not to be got. Demagogues always picture the manufacturer, the contractor—the employer, in fact—as a millionaire, or, at the least, a Lucas, a Kelk, or a Myers; but, in sober truth, more than half the wages in this metropolis are paid by industrious clear-headed men, who have little capital, some credit, and a great deal of skill and energy. Do educated men like Mr. Tom Hughes, M.P., really desire to stop the rise of the working man from the bench to the desk?

A pamphlet, with the title of "Metropolitan Gas Legisla-" tion Past and Prospective," has been issued, which is certainly more remarkable for the sobriety than the force of its style, and also more remarkable for the absence than the presence of the many facts and figures which would well serve the cause of vested interests. We can assure the respectable gentlemen who have stood godfathers to this "case," that the Houses of Parliament, although often dull, are not convinced by dull statements, however true. No great measure has ever been carried or resisted without some eloquence. Even common sense is better received in its best clothes. A brief but minute account of the early struggles of the thirteen metropolitan gas companies—of the dividends they did *not* earn, and of the small dividends they paid up to certain dates—would have its effect on many honest men who now only look on gas companies as greedy, grasping monopolists. Many of these furious opponents forget that gas shares are not subjects of constant speculation. They are largely held by women who have inherited them, and persons of small means out of business who have invested in them at a premium with the view of getting a rather larger interest than the funds produce; and these investments have been largely multiplied since the future of gas companies was supposed to be settled by a compromise and an Act of Parliament. The first gas company—the Chartered—was established in 1810; and the last metropolitan company—the Great Central Gas Consumers—in 1851. In 1849 the average price for common coal gas in the metropolis was 6s. per 1000 cubic feet, that being about half the original charge. In that year the late Mr. Chas. Pearson, with the assistance of the gas consumers and a few capitalists, promoted a Bill for supplying gas at 4s. per 1000 feet, and, although this Bill was thrown out, an Act was subsequently obtained limiting the price to 4s. per 1000 feet and the dividend to 10 per cent., and enforcing an illuminating power equal to 12 wax candles. A general Act had been passed in 1847, in which the dividends of all future gas companies were limited to 10 per cent. In this Act, which was the result of a serious inquiry, it was provided that the surplus profit, after paying 10 per cent., might be carried to a reserve-fund, for the purpose of paying back dividends on the unprofitable years of any company. The establishment of the Great Central reduced the dividends of the City Company (by compelling it to reduce its price to 4s.) to 3 per cent. The two gas companies of Liverpool were united in 1848 by an Act of Parliament; their price was limited to 4s. 6d., and their dividend to 10 per cent. The result of this qualified and regulated monopoly has been a steady reduction in the price of gas in Liverpool down to 3s., and regular dividends of 10 per cent. to the shareholders. In 1857, the force of experience drove all the London gas companies, except those in the City, to give up their competition, and settle a district system, with the view of charging less, and making more money. The matter, after being inquired into by select committees of the Houses of Parliament, was legalized in 1860 in the Metropolis Gas Act. By this Act all the London companies who were not at the time subject to the Gas-Works Clauses Act of 1847 were limited to dividends of 10 per cent.; at the same time the London gas companies were deprived of their right to supplement any dividend of less amount than 10 per cent. by surplus profits of over that amount for more than six years. The price of coal gas was limited for the whole metropolis to 4s. 6d., and for cannel gas to 6s., and the illuminating power was raised to 12 sperm candles instead of 12 wax candles. Tests of purity were established, the companies were compelled to supply gas to any one requiring it, and were prohibited from making any charge for laying down ordinary service-pipes, the cost of which had previously been paid by consumers. Prior to passing this Act in 1859, the Sale of Gas Act had settled the appointment of public inspectors of meters. Whenever any gas company since 1847 has applied for leave to raise additional capital the dividend on such capital has been limited to 7½ per cent., and in some cases to 7 per cent., and the dividend on profits capitalized has been limited to 4 or 5 per cent. The price of gas in London has since been reduced to 4s. per 1000 feet, and further reductions are to be had if the settlement of 1860 be left undisturbed. In 1866 the Corporation of London introduced a Bill for supplying 18-candle gas at 3s. The result was a parliamentary inquiry into the working of the Metropolis Gas Act. The Corporation Bill was thrown out. Dr. Letheby, the Corporation's own witness, stated that 4s. per 1000 was a fair price for 14-candle gas, to the great dissatisfaction of his employers. He considered that without the use of cannel coal the 14-candle illuminating power could not be exceeded. The supply of cannel coal is limited, and the price is constantly increasing in consequence of the demand. In a word, after tracing the history of gas legislation, we can only compare the latest proposition of the Metropolitan Board of Works to a plan by which railway companies should be compelled to reduce their first and second class fares to a penny a mile, and to sell their undertakings at a discount of 40 per cent. on their normal market value.

The fire at the Crystal Palace has called forth, and will continue to call forth, an immense amount of good advice from the class of people who are always wonderfully wise after the event. There are, however, some useful lessons to be learned from this really metropolitan calamity. The pressure put upon the directors by the shareholders has led to at least three measures of false economy. The building has been insured for too small a sum. The whole insurance, £80,000, will not cover the reparable damage. No sum has been set aside for a depreciation-fund, on which to draw in case of accident. The staff available in case of fire has been reduced to a minimum, and that number not residing on the premises. Mr. Bowley, who could do nothing, was close by, but the engineer and firemen were away, and those who were at hand did not know how to turn on the supply of water. It is not extraordinary that, after changes which have, we believe, removed every original officer of the company except the invaluable secretary, the fire-drill of the Crystal Palace has fallen into disuse; and so it will be in every great building after a few years, unless it is made the regular occupation of certain hours in certain days of every month. The most interesting part of the exhibition destroyed is an almost irreparable loss—the tropical and other gigantic plants which had attained such grand dimensions in years of careful culture. Money cannot

replace them. As to the other copies and imitations of ancient art, it is a question whether, if the company had been well insured, their destruction would have been any loss to the shareholders in a dividend point of view. The Alhambra and adjacent courts had lost the charm of novelty; as works of art they had little value to artists, and they had cost a preposterous sum of money in proportion to their attraction. We could have seen the fall of the Egyptian figures without great grief, as they were from the first a gigantic mistake, for, as copies without their original accessories of landscape, they produced no effect. There can be no question that the destruction of the Crystal Palace would be a national calamity, for it is one of the finest places of amusement at all seasons in the world. But that amusement is chiefly found about the transept, the orchestra, the refreshment bars, and the glorious gardens, which last are every year improving. The science and art departments, which held so large a place in the original prospectus, and formed an excuse for so much foolish expenditure on trumpery imitations, have been an infinitesimal part of the attractions of the long-drawn aisle, with its flower and foliage decorations. If the shareholders are wise they will leave investments in art, either originals or imitations, to national institutions, and consider whether some good dining and ball-rooms will not answer their purpose better. Good management would make the Crystal Palace the rival of Richmond, Greenwich, and Gravesend for dinners, to which the excellent musical arrangements might lend an additional attraction. This fire will afford an opportunity of carrying out the idea, especially if glass walls with large windows—a mistake for everything but a conservatory—are replaced by a more comfortable material. Why should there not be large and small dining-rooms, arranged so as to look on the delicious gardens, and to be within hearing of a band at certain hours? With good arrangements a great *chef* might make a reputation, and attract a fair share of the West-end and East-end dinners. Of course, success would require, during the summer months at any rate, a first-rate cook, and a kitchen studied from such as the Earl of Dudley's and Baron Rothschild's. We will back the best pupils of Francatelli against the best pupils of Owen Jones for making the Crystal Palace pay. And let it be remembered that a good dividend would enable the directors to do much more for the healthy recreation of the shilling, or rather the eighteenpenny visitors. The great size of the Palace and gardens has been its permanent difficulty. The expenses of maintenance and repair are frightful, and not easily to be diminished, unless the area is narrowed. Would it not be possible to raise a large part of the sum now required to rebuild, if not restore the wing burned down, by cutting off a margin of building land all round the gardens, including those lately attached to Sir Joseph Paxton's gardens, for the erection of first-class villas, separated from the gardens by an invisible fence, and constructed with double fronts, one to the gardens and one to the road, so as to form an ornamental boundary to the Palace grounds. We have no doubt that Mr. Digby Wyatt's taste would produce the desired union of profit and architectural decoration. Such villas would command fabulous rents. Of course the Crystal Palace in the newspapers has brought out Mr. Frank Fuller with a ridiculous proposal that the public should subscribe to save the dividends of the shareholders in the Crystal Palace, saying that he would be ready to work up the subscription-list with "his clerks and "his office." It would be just as rational to propose a subscription to finish the Millwall Docks, to be paid over to Mr. Scott Russell. There are some people who seem never to learn how much obscurity becomes them. Mr. Frank Fuller was the first managing director of the Crystal Palace, at a larger salary than a Minister of State, and he managed within twelve months to show more extravagant expenditure with smaller results than any Board of Admiralty, which is saying a great deal. Without quoting Latin, we will say, "Let the "auctioneer stick to his hammer"—there bombast is part of the trade!

Lord Dufferin has made it difficult for Irish grievance-mongers to repeat their charges against Irish land-laws as the origin of Irish poverty and discontent in any assembly where contradiction is permitted. Of course, on the platforms of public meetings, and at dinners to do honour to eloquent agitators, any number of rash assertions and unfounded accusations against any class which the orator dislikes may be made. Lord Dufferin proves the over-population of Ireland as compared with its agricultural resources. Its manufacturing resources remain to be developed in some unknown period, when confidence has been restored, and those tender plants, capital and credit, have found a more genial atmosphere than at present exists in Ireland. His lordship has also proved, by unanswerable figures, that it is not evictions that have swelled the army of emigrants who sail every year to exchange uncertain low for certain high wages—land burdened not only with rent but tenants-right payments for land to be bought for a few shillings an acre, and with credit, by instalments. He further shows that the greatest amount of emigration has been from Ulster, where, by custom, the landlords allow the tenant to sell what is called his "goodwill," in which improvements are rarely included. The statistics recently published show that the charge of substituting cattle for population is unfortunately not true; that, on the contrary, there has been within the last five years a considerable diminution in pastures and cattle food crops. Not only is the proportion of root crops less than in England and Scotland, but that 70 per cent. of these crops consist of that bane of Ireland and of all northern peasant populations—the potato. Ireland's prospect of improvement lies in the continuance of emigration, until labourers and tenants both become scarce and valuable—until a large proportion of the rainy districts of Ireland are given up to cattle-feeding on both natural and artificial grasses, and on the roots for the production of which the country is so eminently qualified. Fortunately, the movement of emigration does not depend on the enactment of laws; it is promoted by a law of nature working especially strongly in Irish human nature, in which the ties of blood are so warm, While millions of money are remitted from America emigration will go on.

The repeated assertions as to the comfort and independence of the French and Belgian peasant proprietors have led to the quotation of the following figures, which only confirm our personal investigations into the condition of classes who neither write nor are written about in local newspapers. Out of 7,800,000 peasant proprietors in France, 3 millions were so indigent as to be unable to pay a very moderate land-tax. The lots often yield only 2 per cent. on cultivation; two-thirds are mortgaged; and, in consequence, the charges on the transfer of land often reach nearly 75 per cent. In Belgium, out of nearly 1 million families averaging five persons, half were in actual poverty, and over 300,000 more in poor (*pénible*) circumstances. Yet, in Belgium, economy is carried to a degree unknown and impossible in Ireland; while the land is easier to cultivate, the climate drier, and the markets for surplus produce nearer. To be sure, in Belgium the Liberal party are not strong enough to put down the religious houses, which create a great many paupers by indiscriminate charity. Of course such farmers as these Belgian peasants can only make fertility by their sweat. No improvements—no variations in the course of cultivation—no new labour-saving implements—no choice profitable crosses of live stock, are possible; saving is made by the halfpenny at a time.

Circular to Gas Companies.

The conditions threatened to be imposed on the metropolitan gas companies by the parliamentary committee, by the Government, by the Metropolitan Board of Works, and by the delegates from the vestries and district boards are successively harder and more hard. The parliamentary committee shadowed forth in general terms amendments which they recommend to be made in the Metropolis Gas Act, whereby the illuminating power of the gas would be increased, the price diminished, and its purity improved, without, however, mentioning any specific standards of quality or price. The committee further recommended that the power of the companies to pay back dividends should be limited to three years instead of six, and expressed the opinion that losses sustained through the negligence of the directors or their officers should be charged on the shareholders' dividends, and that a more summary process for recovering penalties against gas companies should be adopted. In addition to these suggested amendments in the Metropolis Gas Act, the committee recommended a further extension of the system of regulated monopoly, either by the amalgamation of the existing companies, or by the disposal of their interests to some body or bodies representing the ratepayers of the metropolis, on such conditions as might be agreed on, or as Parliament might see fit to impose. Acting on these general recommendations, the Government gave notice of their intention

to bring a Bill into Parliament next session, in which notice the amendments to be proposed were more distinctly embodied and greatly extended. In the proposed Bill, we are informed that provisions are to be made not only for the improvement of the quality and the illuminating power of the gas, and the regulation of the price, but that the pressure and the conditions of supply are to be regulated, together with the payment and recovery of gas-rents and meter-rents; the mode of keeping and auditing the accounts of the companies is to be more strict; their capitals and borrowing powers are to be reduced; their profits and dividends are to be limited; and the power to apply surplus profits in the augmentation of previously declared dividends is to be repealed. The appointment of officers to enforce the provisions of the Act; the regulation of the property in, and the execution of works relating to public lighting, with the compulsory adoption of the system of supply by average meter indication; provisions for the settlement of differences by arbitration; to authorize the making of bye-laws by an Order in Council for the better regulation of the gas companies, and for the more summary recovery of penalties, are also to be included in the Bill, which is to extend to the seven suburban gas companies which were specially excluded from the Metropolis Gas Act. These heads of the proposed amendments of that Act, it will be observed, comprise many alterations, in addition to the recommendations of the committee, and the suggestion for the further extension of the system of regulated monopoly has been expanded into provisions for the purchase of the undertakings of all the metropolitan and suburban gas companies by the Board of Works and by the Commissioners of Sewers. Some of the objects thus generally indicated in the notice given by order of the Government of their intended Bill, were brought into specific terms by the committee of the Metropolitan Board of Works, in the report which was agreed to at their meeting on the 21st ult. In the opinion of the Board, the maximum price of gas in London should be 3s. 6d. per 1000 feet, and its illuminating power 18 sperm candles, and that the gas supplied should not contain more than 16 grains of sulphur in any form in 100 cubic feet. The recommendations of the parliamentary committee for testing the gas are adhered to *verbatim* by the Board; and with regard to the accounts, it is merely recommended that a public auditor be appointed, to act independently of the auditors appointed by the companies. They make no reference to the proposed amendments of the Act regarding the reduction of the capitals and borrowing powers of the companies, nor to several of the other points mentioned in the Government notice. The Board may probably think that if the gas companies are compelled to supply highly purified 18-candle gas for 3s. 6d. per 1000 feet, it would be unnecessary for the interests of the ratepayers and gas consumers to inquire minutely as to their financial position, and that the essential thing to be enforced would be the continuance of a supply of gas of the qualities specified. With respect to the terms of purchase, should the Government decide to adopt that course, the Board expressed the opinion that the amount to be paid should not in any case exceed a fixed charge of 6 per cent. on those shares the holders of which now receive 10 per cent., and the Board made it a condition of their purchase that the terms should be fixed by Parliament. In the opinions expressed by the Metropolitan Board of Works for the guidance of the Government there are at least broadness and boldness to recommend them. They would compel the gas companies to supply gas of high illuminating quality on terms little above cost price, and would leave them to settle among their respective shareholders the question of profit and loss; or, should the Government determine to give the board power to buy the undertakings of the gas companies, they would have the purchase-money fixed absolutely, without any shilly-shallying about valuations, and at a rate at least 40 per cent. less than the dividends now received. It is well to have the demands of the Board thus broadly stated, that the Legislature and the public may clearly understand on what conditions it is proposed to deal with property, the possession of which in its integrity has been assured by numerous Acts of Parliament. The opinion entertained of what would be the effect of the proposed amendments was very significantly expressed by some of the members of the Board at the meeting at which the resolutions were agreed to. Mr. Richardson candidly admitted that if the illuminating power of the gas were increased to 18 candles, and the price reduced to 3s. 6d. per 1000 feet, there would be scarcely any profit to make it worth while for the Board to undertake the management of the gas supply for the benefit of the ratepayers; and he consequently objected to fixing any standard of quality or price in the event of the purchase of the works by the Board. Mr. Bidgood proposed that the companies should be allowed to continue the supply nearly as at present, but that they should pay the Board £100,000 annually for the monopoly. That tax, of course, the gas consumers would have to pay indirectly, and a similar disregard for the interests of the consumers of gas was manifested by other speakers, whose principal object seemed to be to mulct them for the benefit of the ratepayers.

The delegates from the vestries and district boards adopted a different course from that of the Board of Works in their suggestions for the amendment of the Metropolis Gas Act, which are inserted in another column. They examined the Act clause by clause, and in the amendments suggested they adhered so closely to the main points specified in the notice of the proposed Government Bill as to strengthen the suspicion that it was drawn up under their auspices. If the Metropolitan Board propose to chastise the gas companies with stripes, the delegates, it seems, would scourge them with scorpions. The amendments suggested by them comprise—the limitation of the payment of back dividends to three years; the extension of the Act to the suburban districts; the compulsory adoption of average meter indication for the public lamps, with a maximum of 1 lamp in 12, and a minimum of 1 in 50; a constant pressure equal to 1 inch of water in all parts of every consumer's premises; an increased illuminating power of 25 candles for cannel gas, and of 15 and 18 candles for common gas; a reduction of the tolerated amount of sulphur from 20 to 10 grains per 100 cubic feet, and the absolute prohibition of sulphuretted hydrogen; maximum prices of 3s. per 1000 feet for 15-candle gas, 3s. 6d. for 18-candle gas, and of 4s. 6d. for cannel gas; an improved form of accounts, with a thorough examination of the capital accounts, "so as to furnish materials for a schedule to the Bill, setting forth the real and proper amounts of capital and the rates of dividend to which each company is entitled at the present time;" a provision that no new works be erected within seven miles of St. Paul's, and for the removal of all old works beyond that distance within five years; also a provision, in case the works be not purchased by the Metropolitan Board, for the amalgamation of all the existing companies into four, two on the north of the Thames and two on the south; the prohibition of the capitalization of profits, with the limitation of dividends on any existing capital so created to 3 per cent.; and, finally, a provision for deducting compensations for accidents and penalties from the 10 per cent. dividends absolutely.

Judging from these successively augmenting demands for amendments of the Metropolis Gas Act, it might be supposed that the gas companies had most flagrantly abused the powers entrusted to them by that Act; that the supply of gas had been deficient in quantity, bad in quality, and that the price charged had been above the prescribed maximum; that they had failed to render the required accounts; that they had divided more than the prescribed dividends; and that they had, in short, so far contravened the provisions of the Act as to render it necessary for Parliament to interfere for the protection of the public. But nothing of the kind can be reasonably alleged. Even the parliamentary committtee, who heard only the witnesses adverse to the gas companies, did not justify their unfavourable report by any imputation that the provisions of the Metropolis Gas Act had not been complied with. The gas companies were in a condition to prove, and would have done so had their witnesses been examined, that they had more than fulfilled the requirements of the Act; that the illuminating power of the gas supplied had been higher than the standard; that the prices charged had been reduced, in several instances, lower than the provisions of the Act required; that the companies had adopted all practicable means for its purification; that, with one or two exceptions, the Act had been very liberally carried out for the benefit of the public; and that no complaints could reasonably be made of its infringement. It would have been well, indeed, had there been no exceptions to the liberal fulfilment of the provisions of the Act—which, had our advice been taken, there would not—and then probably the outcry that was raised and the proposed amendments of the Act consequent upon it would not have been heard nor suggested. But even in those exceptional cases nothing was done contrary to law. Under such circumstances it seems monstrous that alterations should be proposed to be

made in an Act passed so recently as 1860, which, if they were carried into effect, would be altogether subversive of the arrangement then considered fair and equitable, and would be equivalent to the confiscation of a large portion of the property which has been invested by the shareholders on the faith of Parliament. Some of the suggested amendments of the delegates out-Herod Herod. It is true that they would allow, as if in mockery, back dividends for three years, but other of their propositions would be so destructive to the interests of the shareholders that they would fain prefer the offer of the Board, with its boldness and freedom, than be suspiciously scrutinized, trammelled, and defrauded by accepting the insidious suggestions of the delegates.

The Government have now before them the report of the committee of the Board of Works, the suggestions of the delegates from the metropolitan vestries and district boards, the representations made by the deputation from the gas companies at their interview with the President of the Board of Trade, and the recommendations of the parliamentary committee, from which they have to determine what shall be the nature of the provisions of the Bill to be introduced for the regulation of the gas supply of London. We believe they have not as yet come to any decision on the subject, and that they have invited the gas companies to consider the resolutions agreed to by the Metropolitan Board, and to communicate their views respecting them before drafting the Bill which it is intended to introduce. It is to be hoped that the companies will make their case complete, and thereby repair the injury they sustained in the last session from the adverse report of the select committee, founded on *ex parte* evidence. It should be borne in mind that, though this question applies immediately only to the metropolitan gas companies, the precedent established in their case by any legislation in 1867 will affect the interests of every gas company in the United Kingdom, in the same manner as they were affected by the legislation of 1860. It is necessary, therefore, that on behalf of the provincial gas companies a vigilant watch should be kept on the measures that may be adopted in dealing with the gas interests of the metropolis.

A writer "with a free pen" in the *Worcestershire Chronicle* takes exception, in no very courteous terms, to that portion of our recent notice of the returns from gas companies presented to Parliament wherein the prices charged for gas in those towns supplied by local authorities are mentioned as not presenting very satisfactory results to gas consumers. It is asserted that those representations are "grossly inaccurate" and "mendacious," in proof of which the writer proceeds to quote from the returns the prices charged to all classes of consumers in the seven towns named. With two exceptions, however, in which the reductions made within the last half of the second year were overlooked, our statement of the prices charged to general consumers of gas are not contradicted. There is, indeed, an apparent difference, because the writer includes the reduced prices charged to millowners and other large consumers, to whom considerable allowance is made, which does not affect the great body of the consumers of gas. The comparative advantages of Corporation management and of a supply of gas from companies, are shown in a striking manner by taking from the returns the average price charged in Stockport, Birkenhead, Bury (Lancashire), Congleton, Oldham, and Middleton, all situated in coal districts, where the supply of gas is in the hands of the local authorities, and contrasting it with the average price charged by gas companies in the following places, similarly situated—namely, Barnsley, Bath, Birmingham, Bolton, Bradford, Bristol, and Liverpool. In the former, the average charge to ordinary consumers within the last half of 1865 was 4s. 3½d. per 1000 feet; and in the latter towns the price averaged only 3s. 4d. It may be observed also that the shareholders of five of those companies received their maximum 10 per cent. dividends, and the gas consumers have therefore reason to expect a further reduction in the price of gas. This difference of nearly 1s. per 1000 feet must, we think, convince even the random writer "with a free pen" that there was some truth in our remark that the "gas consumers who are supplied from Corporation gas-works have not much reason to rejoice at being so circumstanced."

A large portion of our present number is occupied with a report of the new trial in the case of *Ward v. The Gaslight and Coke Company*, for the recovery of damages caused by the explosion of gas in, and consequent destruction by fire of Saville House, Leicester Square, to which we alluded in our last. The question of fact, as to the state in which the service-pipe was actually left when the meter was disconnected and removed, became a minor consideration when the case was summed up by Lord Chief Baron Kelly. Assuming that the end of the pipe was bunged up with a cork when left by the gas-fitters, as they stated, the security of that method of closing it was disputed, and several witnesses were called to prove that the proper plan to be adopted is to screw on an iron cap. But the point upon which the Chief Baron laid most stress was, whether a distinct and intelligible notice had been given to the occupier of the premises by the defendants' servants of what they had done, and that no attempt must be made to light the premises with gas from that service-pipe until a new meter should be fixed. The evidence on that point was far from clear, and as Bloom, the occupier, is a German, not acquainted with English, the communication said to have been made to him to that effect was through an interpreter, who stated, however, that he understood the gas-fitter to say that a temporary service-pipe had been connected with the burner, and not that the gas had been cut off. It was quite evident, indeed, that the persons in possession of the rooms at the time of the explosion, and who turned on the gas, were not aware that the service-pipe had been disconnected. His lordship left it with the jury to determine from the evidence whether the servants of the company had given such clear and intelligible intimation as to what it was necessary to do or to avoid doing, and after a deliberation of half an hour they gave a verdict for the plaintiff. The Chartered Company seem to verify the adage that misfortunes never come alone, for the recent disastrous fire in Feather Lane is attributed to an escape of gas from that company's mains.

Forty-eight of the fifty-two gas Bills of which notices were given have been lodged at the Private Bill Office, but we are compelled to defer the publication of the analyses of them until our next issue. The four notices for which no Bills have been lodged are those of the Nidd Valley Gas and Water Company, the London Corporation, the Liverpool United Gas Company, and the United General Gas Company, Limited (Limerick).

The lighting of Dublin with 16-candle gas, under the new contract with the Corporation, commenced on the first night of the new year, and that city may now boast of being one of the best lighted cities in the world. The system of average-meter indication is to be adopted in the supply of the public lamps, a meter being fixed to every twelfth lamp, and each lamp is furnished with a pressure-regulator adjusted to burn 4 feet of gas per hour.

Register of New Patents.

APPLICATIONS FOR LETTERS PATENT.

3372.—William Clark, of 53, Chancery Lane, in the co. of Middlesex engineer and patent agent, for "*Improvements in screw-valves.*" A communication. Dec. 21, 1866.

3401.—William Bradburn, of Wednesfield, Wolverhampton, in the co. of Stafford, artificial manure manufacturer, for "*Improvements in treating excrementitious matters and other refuse matters for the purpose of obtaining valuable products therefrom, and in apparatus to be employed for that purpose.*" Dec. 28, 1866.

3405.—William Clark, of 53, Chancery Lane, in the co. of Middlesex, engineer and patent agent, for "*Improvements in valves.*" A communication. Dec. 28, 1866.

3409.—William Henry Cutler, of Eton, in the co. of Bucks, civil engineer, and Thomas Brown, of Grove Villas, Victoria Park, in the co. of Middlesex, civil engineer, for "*Improvements in cocks for stopping and regulating the flow of steam, water, and other fluids.*" Dec. 28, 1866.

3411.—Henry Bollmann Condy, of Battersea, manufacturing chemist, for "*Improvements in the manufacture of chlorine, and in preparations for evolving chlorine for disinfecting and other purposes.*" Dec. 28, 1866.

3424.—Charles Harrison, of the city of Manchester, in the co. of Lancaster, machinist, for "*Improvements in cocks or valves.*" Dec. 29, 1866.

3438.—George Shrewsbury, of Lower Norwood, in the co. of Surrey, ironmonger, for "*An improved apparatus for heating apartments, conservatories, and baths.*" Dec. 31, 1866.

3448.—William Clark, of 53, Chancery Lane, in the co. of Middlesex, engineer and patent ageut, for "*Improvements in the manufacture of hydrogen gas and in apparatus for the same, also in the application of the said gas for lighting and heating and as a motive power.*" A communication. Dec. 31, 1866.

GRANTS OF PROVISIONAL PROTECTION.

3139.—Edward Hughes, of Bagillt, in the co. of Flint, for "*Improvements in machinery or apparatus for exhausting and forcing air and gases, and for propelling vessels.*" Nov. 29, 1866.

3181.—Joshua Horton, of Birmingham, in the co. of Warwick, engineer, for "*Certain improvements in the method of producing metallic tubes, pipes, or other similar hollow articles.*" Dec. 4, 1866.

3226.—ALEXANDER COLVIN FRASER, of Colchester, in the co. of Essex, for "*Improvements in apparatus used in the manufacture of gas.*" Dec. 7, 1866.

3242.—WILLIAM WARREN, of Alstone, near Cheltenham, in the co. of Gloucester, machinist and engineer, for "*Improvements in pumps.*" Dec. 8, 1866.

3258.—EDMUND SMALL CATHELS, gas engineer, of Lower Sydenham, in the co. of Kent, for "*Improvements in apparatus for conveying and regulating the supply of gas.*" Dec. 11, 1866.

3296.—THOMAS HOEY, of Glasgow, in the co. of Lanark, N.B., engineer, for "*Improvements in arrangements and apparatus for measuring and controlling the supply of water for closets and general uses, and for the deodorization, removal, and utilization of excrementary matters.*" Dec. 15, 1866.

NOTICES TO PROCEED.

2064.—JOHN EDWIN KEIRBY, of Parker Street Mill, Manchester, in the co. of Lancaster, india-rubber merchant, for "*Improvements in packing for steam, water, air, and gas tight joints.*" Aug. 11, 1866.

2091.—EDWIN WILLIAM DE RUSETT, of Lewisham, in the co. of Kent, engineer, and RICHARD FARRELL DALE, of Shoe Lane, in the City of London, founder, for "*Improvements in pumps, and in adapting them for propelling vessels and for other purposes.*" Aug. 15, 1866.

2206.—The Rev. THOMAS DAVIS, of Roundhay, in the co. of York, clerk, for "*An improved method of or apparatus for ventilating dwelling-houses or other buildings.*" Aug. 27, 1866.

Legal Intelligence.

COURT OF EXCHEQUER.

GUILDHALL, TUESDAY, DEC. 18.

(*Before Lord Chief Baron* KELLY *and a Special Jury.*)

WARD *v.* THE GASLIGHT AND COKE COMPANY.

The SOLICITOR-GENERAL (Mr. Karslake, Q.C.), Mr. MANISTY, Q.C., Mr. C. POLLOCK, and Mr. H. T. HOLLAND, appeared for the plaintiff; and Mr. HAWKINS, Q.C., Mr. COLERIDGE, Q.C., and Mr. HANNEN, for the defendants.

This action arose out of the fire at Saville House, Leicester Square, on the 28th of February, 1865. At the sittings after Michaelmas Term in that year, the case was brought on for trial before Lord Chief Baron Pollock, and on the third day of the trial that learned judge nonsuited the plaintiff on the ground that the cause of the accident was not the negligence alleged in the declaration on the part of the defendants. In Hilary Term last, the plaintiff obtained a rule to set aside the nonsuit, and for a new trial.

The declaration stated that the plaintiff was the lessee and occupier of certain rooms and stables, being part of a house called Saville House, Leicester Square; that the defendants supplied the said house with gas; that they were negligent in the management of their pipes and meters in the house, and omitted to take proper care to guard against accident, by reason of which large quantities of gas escaped, and an explosion took place, whereby the plaintiff's property was destroyed. In a second count it was alleged that the plaintiff was the owner of certain stables and premises close to and adjoining Saville House; it also alleged the same negligence on the part of the defendants, and the like damages. The defendants pleaded "Not guilty," and a denial that the plaintiff was the lessee and occupier of the premises, and upon these pleas issue was joined.

The SOLICITOR-GENERAL, in opening the case, said the plaintiff in this case, Mr. John Ward, was in the month of February, 1865, carrying on business as a chair-maker in part of the premises known as Saville House, on the north side of Leicester Square. The defendants were the Gaslight and Coke Company, a company carrying on extensive works, and having stations in different parts of the metropolis. Saville House was supplied by them with gas from their station in the Horseferry Road. This action was brought for negligence on the part of the company in the conduct and management of their business, whereby an explosion of gas took place on the 28th of February, 1865, and resulted in the total destruction of Saville House. The plaintiff had been carrying on business there for some time, and the house, which was a very large one, was occupied by several different tenants. From some time about Christmas, 1864, until the day of the explosion, a German named Bloom had occupied the bar, the kitchen, the music-hall, and a back passage in the house, all of which parts were lighted by a 100-light meter at the back of the house. Bloom had also occupied the billiard-room and the passage from the square in front of the house—the plaintiff's portion of the premises being to the right of this passage. This part was lighted by a 50-light meter, which was the one to which the attention of the jury would be specially directed. The billiard-room was immediately over the shop occupied by the plaintiff, on the right-hand side of the passage going in from the door. Some time before the fire Bloom had taken other rooms in the premises—amongst these a large saloon, which was also supplied with gas from the 50-light meter. A short time before the 28th of February, an inspector of the defendants—a Mr. Cazally—hearing that the saloon was about to be occupied, called upon Bloom for the purpose of making arrangements as to the sum to be paid for the gas consumed in that room. Cazally seemed to have been entirely ignorant as to the pipes that were in the house, and the rooms supplied by them. He was told that no arrangement could be made when he called, because Bloom was out, and he said that he would call in a week with respect to the lighting arrangements and the supply of gas. The front passage in Saville House was divided from the back by folding doors, and was lighted by a service-pipe from the 50-light meter. This meter was immediately behind the front door, and the tap by which the gas was turned on from the main to the meter was about 6 feet from the ground, the meter itself being fixed still higher up upon a shelf, enclosed in a cupboard. On the day before the explosion, Cazally called with a man named Downs, and had some conversation with a man named Larven, who was the superintendent of Bloom's premises, and, after some examination of the meter, he suggested that a very large quantity of gas had passed through it which was unaccounted for, and that there must be some escape. He made that a pretext for taking away the meter, which he said he would do the next day. Accordingly on the Tuesday he called again with Downs, the gas having been used the night previously in the billiard-room, in the chandelier in the hall, and the saloon. Cazally then had some further conversation about the gas, and then proceeded to work upon this meter. The inlet service was detached, the gas at that time, of course, being shut off from the main. It seemed that the company's men were unprovided with anything necessary for carrying out their work properly, and they applied to a person in the employ of Bloom for something with which to stop the inlet-pipe of the meter. Larven suggested that the best place to put the meter after it was removed was in the celler, which was accordingly done. After remaining for some time on the premises they left, telling Larven that the gas was all right, or leaving that impression on his mind. In fact, the only way in which the rooms could be lighted was by gas through the service-pipe. The billiard-room had a day or two before the explosion been let by Bloom to a man named Roth, and as dusk came on that evening, there being persons in the room playing at billiards, this man, not knowing that anything was the matter with the meter or the service-pipe, went with another man to the tap behind the front door for the purpose of turning on the gas. The other man turned the tap, and Roth proceeded to endeavour to light the chandelier in the passage. He found he could not do it, and he then went back into the billiard-room. He there spoke to Rose, the cellarman in the employ of Bloom, as being more accustomed to it, and Rose went out with him for the purpose of seeing what was the matter. Rose took the steps which Roth had been using at the chandelier, and placed them at the spot where the meter had been. By the aid of a candle, which he had taken for the purpose of examining the state of things, it being perfectly dark in that corner, he saw in a moment that the pipe through which the gas had been supplied was perfectly open. In another moment a tremendous explosion took place. Rose was thrown down from the steps, and narrowly escaped with his life; the whole of the premises caught fire, and Saville House was burnt down. This was the short history of the case; and the case for the plaintiff was this—that if Cazally and Downs, as alleged, left the service-pipe in the way it was represented that they did—if, in point of fact, they left it in such a state that there was nothing whatever to prevent an escape of gas when the tap was turned—it was a gross case of negligence, for the results of which the defendants were liable. It was right to inform the jury that this matter had been already the subject of an investigation, and that upon the former inquiry it was suggested that the defendants servants put a bung into the inlet service-pipe when the meter was disconnected. Now there was a perfectly well-known mode of stopping the flow of gas in a such case, and that was by the use of an iron cap, which was screwed on to the end of the service; and there was no doubt that if this had been done the premises would be safe. He (the Solicitor-General) did not mean to say that a bung would not be an expedient for the purpose, but it was a very improper mode of doing it, especially considering the explosive character of gas. But the fact would be established beyond all dispute, that when Rose went to light the gas in the evening he found the key of the tap left in its ordinary place, and the inlet-pipe with no cork in it at all. It certainly seemed a little extraordinary that the defendants men should be provided with a bung for such a purpose—whether they had caps with them he did not know—when it was remembered that, in order to stop the inlet of the meter, they were obliged to borrow a cork from Rose. The consequence of the explosion was very serious. The whole of the house was burnt down; and, as far as Mr. Ward, the plaintiff, was concerned, he had lost everything. The jury should be told that the plaintiff was insured to some extent, but, though he had been paid the amount of his insurance, he was still a considerable loser. In the present action, so far as he sued for damages beyond the amount of his insurance, he sued in his own right; so far as he was covered by his insurance, he sued as trustee for the insurance company. The jury, however, would not be troubled to go into these matters, as it had been arranged between the solicitors for the parties that their verdict should only be asked on the question of the liability of the gas company, the question of damage to be afterwards referred to some gentleman agreed upon. The question, therefore, to-day was whether there had been any negligence on the part of the defendants. From what he already knew of the case, he was aware that some collateral issues were raised, but he had not thought it necessary now to go into them. He had stated shortly the facts bearing upon the main point of the inquiry, and should hereafter have an opportunity, if necessary, to go into the collateral issues. At present he contented himself by stating that upon the evidence it would be shown there was negligence on the part of the defendants which led to the disastrous results he had mentioned.

William Larven, the manager for Mr. Bloom at the time of the fire, was then called, and examined by Mr. MANISTY. His evidence was chiefly a repetition of that given by him at the former trial, and reported at length in the JOURNAL of December 26, 1865. In substance it was as follows:—Having described the arrangement of that portion of Saville House occupied by Bloom, and the position of the meter, service-pipe, and burners, he stated that about a week before the explosion the inspector of the gas company called to see Bloom respecting the lighting of the saloon, which he had recently added to his tenancy; that Bloom not being within he was told to call again; that on the day before the fire he did call, examined the 50-light meter standing behind the front door, and stated that 40,000 feet of gas had passed through it, which Bloom must pay for. Witness told the inspector that no gas through that meter had been used during Bloom's tenancy, and that he had better see the proprietor of the house, a Mr. Morris. The inspector said there must be some escape from the meter, and that he would call the next day, take it down, and replace it with another; and he asked witness to get £3 from Bloom, to be deposited with the gas company as security. On the following day the inspector called with a man, and having borrowed a pair of steps, they unfixed the meter, which was afterwards removed to the cellar. The inspector told him that the company had not another meter ready, but he would connect the pipes, and send one as soon as possible. Witness saw nothing put into the service-pipe, and when he and Bloom left the house in the afternoon he had no reason to suppose that the pipes were disconnected so that the gas could not be burned. When he returned to the house at a quarter past six o'clock the explosion had taken place, and the premises were on fire.

In cross-examination by Mr. HAWKINS, *witness* could not recollect whether what the inspector said when he took down the meter was that he would "secure" the pipes or would "connect" them. He did not remember which it was that he swore on the last occasion, nor whether he then stated that the inspector promised a new meter in eight days. If he said so it was true. He did not know where Bloom was now, and had not seen him for fourteen or fifteen months. He did not recollect having seen him in court at the former trial; he thought the last time he saw him it was at his own house—a beer-house, in Ratcliff Highway. Bloom went there after the fire in Leicester Square. Besides the 50-light meter behind the front door at Saville House, there was a 100-light meter in the back passage after passing the folding doors, which supplied gas to the music-hall and other parts of the building. He had seen the state of that meter taken, and the gas accounts paid by Mrs. Bloom,

but had nothing to do with them himself. He did not know whether during Bloom's tenancy there had ever been anything paid for gas supplied through the 50-light meter. Bloom went into possession of the premises in September, 1864. The billiard-room was not used as such for some time afterwards. It was first used to exhibit a fat woman or a dwarf in, and afterwards as a dining-room for about a month. During that time gas had been burned in it. Witness did not know that that gas came through the 50-light meter. He did not recollect whether the saloon had been used as an exhibition, nor whether on the last occasion he stated that it had. If he did swear it, it must be true. Bloom had used gas in the large saloon above the billiard-room at different times before February, 1865, and had used it in the billiard-room itself every day. The inspector, when he examined the 50-light meter, said there had been 40,000 cubic feet of gas used since Roberts, the former occupier, left, for which Bloom must pay. Witness told him that it was not likely Bloom would pay, as he had not used it. He knew at the time that gas had been burned by him in the saloon occasionally, and in the billiard-room constantly, but he thought those rooms were supplied through the large 100-light meter. He never turned on the gas himself. If he stated on his former examination that he knew the passage leading from the entrance was lighted from the meter behind the door, that must be true. If on the last occasion he stated, in answer to the question, "Now, at the time the fat woman was there the billiard-room was supplied from the meter behind the door?—Yes, from behind the door," it must have been so. He did not remember whether, when the 50-light meter was taken down, anything was said by the inspector as to how the gas consumed was to be ascertained, nor whether, on the last occasion, he stated there was nothing said on that subject. Bloom was present when the meter was removed, and might have seen it standing in the passage. Witness did not himself see any connecting-pipe fixed after the meter was taken down. He did not recollect whether on the last trial he stated that Bloom said he would have a 30-light meter put up, because the rent of it would be less. Very likely he did. A man named Rose, who was the cellarman, usually attended to the gas, but sometimes one of the waiters turned it on. He did not know whether the steps used by the gas company's men in taking the meter down were left in the passage. He believed that he saw corks in the inlet and outlet of the meter, but did not know who put them there.

In re-examination by the SOLICITOR-GENERAL, he said the steps used belonged to the house. He was engaged playing cards during part of the day, and, when he saw the meter in the passage, it was while passing along from the billiard-room. He managed the business for Bloom, and sometimes got money for doing so. He had nothing to do with Bloom at present, and had not been in his service since the fire. At the time the trial was first fixed to take place—*i.e.*, in July, 1865—he saw Bloom in the court, but had not seen him since. Up to the period of the fire he did not know what lights were supplied by each of the meters; he had had nothing to do with turning on the gas. He went to assist Bloom soon after he took the premises, and from the first the chandelier in the passage was always lighted in the evening. Until the exhibition took place he believed that no gas was used in the brilliard-room; afterwards, and down to the period of the fire, gas was constantly burned there. There were glass doors in the billiard-room, so that any one going along the passage could see into it. The number of burners used varied, the largest number being metal. He did not think there had been any exhibition in the saloon above the billiard-room, but gas had been used there a few times before the inspector called, because a German club met there occasionally in an evening. When the inspector called on the Tuesday, and saw Bloom, witness interpreted between them, as Bloom, who was a German, could not speak much English. It was about two o'clock in the afternoon that he saw the meter standing in the passage. After that time Bloom was in the billiard-room until he went out in company with witness.

George Roth, examined by Mr. POLLOCK, stated that the day before the fire he hired the billiard-room of Bloom, and in the evening a waiter named Schultz showed him how to turn on the gas at the meter behind the door. On the following day at dusk, when lights were required, he went to the place and turned the tap. The corner was rather dark; the tap was about 4 feet from the ground. Some one in the billiard-room then tried to light the gas, and found he could not do so. Witness turned the gas off at the meter, and went into the billiard-room, where a man named Klassen was playing, and got him to accompany him to ascertain the cause. The gas was again turned on, and Klassen got the steps and tried to light the chandelier in the passage. Finding they could not do so, witness again turned the tap at the meter, and returned to the billiard-room, and asked Rose, the cellarman, to come and see what was the matter. Rose got a candle from a painter who was near the kitchen door, and took the steps into the corner where the meter had been. At that moment witness smelt an escape of gas, and cried out, "Take the candle away! there is a smell of gas; it is dangerous." A moment afterwards there was an explosion, and the place was on fire. The ceiling fell in, and witness was knocked down. Before that time he had not smelt gas on the premises.

In cross-examination by Mr. COLERIDGE, *Witness* said he had been on the premises on the day of the explosion from half-past eight in the morning, but did not see any men at work or any meter taken down. He thought, in the evening, he turned the gas on twice. The first time it was kept on about five minutes. He did not smell any escape then. About five or eight minutes afterwards it was turned on a second time. He then heard a whistling noise in the corner. That only went on for about a minute; he told Klassen about it, and then turned the gas off. He did not smell anything then. When Rose was sent for it was turned on the third time. That was five or six minutes before the explosion. The first time he smelt the gas was when the painter came with the candle. When he heard the whistling in the corner, he did not go to see what it was. It was not a very loud noise. He was sure that the key was on the tap when he went there the first time that evening, and he stated so when examined on the last trial. He thought the whistling noise was different to the sound heard when turning on gas to a chandelier. He had never had anything to do with lighting the gas before, nor was he ever there when it was being lighted. He had frequently been in the billiard-room before and found it lighted up. He had only been once in the saloon above when the gas was alight; that was on the occasion of a kind of ball.

In re-examination by Mr. MANISTY, *Witness* said when he went to light the gas on the Tuesday the key was in the same place that Schultz showed to him on the Monday. He had no notion at the time that the pipes had been disconnected, or that anything had been done. He had been in the billiard-room the whole day, and had seen Bloom there. It was between five and six o'clock when he went to turn on the gas.

William Rose, examined by Mr. HOLLAND, said he was the cellarman to Bloom at Saville House at the time of the fire, and had been there about three months. When he first went, the billiard-room was not in use as a billiard-room, but about six weeks before the fire it was begun to be so used, and gas was burnt in it every night. Previous to that there had been an exhibition there of a fat woman. It was part of his duty to attend to the gas. There were about eight burners round the wall, and two in the middle over the billiard-table. In the saloon there were about twenty lights. That room had been used for three weeks, two or three nights each week. On the 27th of February he saw the two men from the gas company in the music-hall at Saville House. He did not see them at work upon the meter behind the front door. They were there again on the 28th, and about one o'clock in the afternoon of that day he saw them at work in the corner where the 50-light meter was, but did not know what they were doing. Shortly afterwards one of them came and asked him for a cork, and witness gave him one that had been in a lemonade bottle. The man said this was too small, and witness told him he had some bigger ones in the cellar. They went together into the cellar, where witness had a bag full of corks and bungs. The man picked out one of biggest, and said, "If you have another one like this I am satisfied." He took two, and witness saw those bungs afterwards in the inlet and outlet passages of the meter when it was brought down to the cellar-door. About three o'clock in the afternoon witness was told to get Bloom's pony and cart ready, which he did. At half-past three he went into the billiard-room and told Bloom it was ready. Bloom was then playing at cards, but he did not know who with. Witness then went into the kitchen, and saw the two gas men there. He was in the billiard-room playing billiards when it was getting dusk, and some one asked for lights. Klassen and Roth went out to turn on the gas. Klassen came back and said the gas would not light at the chandelier in the front passage, which it was the practice to light first. Witness went out, and Roth followed him. He told some one to get a candle, and when it was brought he went to the tap and turned the gas on. The steps were in the passage under the chandelier, and he told Roth to try if the gas would light. It would not do so, and witness then took the steps and placed them in the right-hand corner behind the door where the meter had been, intending to see what was the matter. He went up two or three steps with the candle in his hand to see if there were any connexion or not, when the explosion took place. Just before that he looked at the inlet-pipe, and saw there was nothing in the end of it. There was no bung in it; it was clear, open at the mouth.

In answer to the LORD CHIEF BARON, *Witness* said he saw that the meter was gone, and that the inlet-pipe which formerly conveyed the gas into the meter was open at the orifice, so that the gas which passed through the pipe after the tap was turned on came out into the passage.

In further examination, *Witness* said there was no cap on the pipe. He did not hear any noise before he went up the steps, but he did when he was there, just before the explosion. It was a whistling noise.

Cross-examined by Mr. HAWKINS: *Witness* repeated that it was while he was going up the steps with the candlestick in his hand, after he had turned on the gas, that the explosion took place. He had not then put the candlestick down upon the shelf where the meter formerly stood. Being further pressed upon the subject, he said that he did not know whether the candle was in his hand or not. On the last occasion he swore that he went up the steps with the candle in his right hand, and put his left hand on the place where the meter used to stand; that he then placed the candle in the other corner, and as soon as he had put it down he heard a noise, and the explosion took place. He did not now know whether he had the candle in his hand or had put it down. It was his duty to attend to the gas; but he did not know there was a meter in that corner before that day, though he had been in Bloom's service three months, and had turned on the tap in that corner whenever the gas was required. He knew the meter had been taken away that day, because he had himself removed it out of the passage into the cellar, and he knew that if no connecting-pipe had been put up the gas would escape on turning the tap. The saloon had been used two or three evenings a week for two or three hours each time, and the gas lighted from nine to twelve o'clock sometimes when the club was held there. It was while the gas-men were working in the corner of the passage that one of them came to him and asked for corks. He had a basketful of lemonade corks underneath a form in the passage close by, and gave the man one, which he said was too small, and the man then went down with him into the cellar. Witness did not know where the other man was during that time; very likely he remained working in the corner. When they got into the cellar witness took a handful of bungs out of the basket—three or four different sizes. He did not know whether on the last occasion he said a single word about having a bag or a basket full of corks. He did not know where Klassen now was. He had never before the night of the fire smelt the smell of gas, and not then until he was up the steps, and he had no suspicion that any was escaping till half a minute before the explosion. The moment he heard the whistling noise he looked up, and saw there was nothing in the pipe. He then stooped down, and tried to turn off the tap, but before he could do so the explosion took place. The key of the tap was always kept on it; he never knew it to be taken away.

In re-examination by the SOLICITOR-GENERAL, *Witness* said he was blown down by the explosion, and escaped with difficulty from the premises. He was in the hospital for some time afterwards. He only gave the gas-man two corks in the morning of that day, and shortly afterwards—about ten minutes—the man came and asked for a place to put the meter in. Cazally, the other man, was then with him. They were both in the kitchen at half-past three, and neither of them during the whole time told him that the gas could not be lighted.

In answer to the LORD CHIEF BARON, *Witness* said nobody ever told him that, in consequence of what had been done, the gas could not be lighted. He was quite sure that nothing of the sort was said to him. His duty did not often call him up into the saloon; but he had been there when the club was being held, and, in the absence of the waiter, he used to serve there. Either he or one of the waiters used to turn on the gas, Bloom or Larven giving directions when it was to be done. He always turned the gas off at the meter at night when the others left, as he slept in the house. On the evening of the fire he saw that the inlet-pipe was open as soon as he looked up on hearing the whistling sound.

Lord Chief Baron KELLY: But only when you heard the whistling noise?

Witness: Yes.

Lord Chief Baron KELLY: But when you first went there you knew that the meter had been taken away. Did you suppose that the inlet-pipe had been somehow or other connected with the outlet-pipe?

Witness: Yes.

Lord Chief Baron KELLY: But when you came to look at it you found it open, and nothing to connect it with the other pipe?

Witness: No.

Lord Chief Baron KELLY: You have no reason to suppose that either of these men ever asked for any other cork or bung except the two which they had from you?

Witness: Not out of the bag, because I locked the cellar-door.

Lord Chief Baron KELLY: And had you corks or bungs in any other part of the premises?

Witness: Not bungs.

Lord Chief Baron KELLY: I mean corks large enough for that purpose.

Witness: None, except in the cellar.

Lord Chief Baron KELLY: Then you are sure that no other than these two large corks were obtained on the premises that afternoon?

Witness: No; there were not.

Mr. *C. E. Beach*, examined by Mr. MANISTY.

I am a partner in the firm of Buckley and Beach, gas-fitters and gas apparatus manufacturers. I have been in business as a gas-fitter since 1849, and have had considerable experience in fitting up and removing meters. It is a most usual thing to have to remove meters.

Mr. MANISTY: Now, if you are going to take away a meter for a few days, what do you do?

Mr. HAWKINS: I do not see how this is evidence at present.

Lord Chief Baron KELLY: Is it not very material to ascertion what it was the duty of other people to do?

Mr. HAWKINS: I may inform your lordship that this is the very kind of evidence which the late Lord Chief Baron refused to receive.

The SOLICITOR-GENERAL: He said three witnesses on each side were enough.

Lord Chief Baron KELLY: I do not enter into what took place on the last occasion. I have no account before me of what took place in court, and I must therefore act upon my own opinion; in my opinion this is very material and important evidence. (To witness:) Now, if you take away a meter for a few days, or a week, or a fortnight—we may as well put the question thus—a meter like that of which the model is before you, with the inlet-pipe and the outlet-pipe as you see there, what precautions would you take to prevent mischief—first, supposing the supply of gas is to be continued, and then, if the supply is not to be continued?

Mr. MANISTY: Supposing the use of the gas is to be continued, what would you then do?

Witness: In that case we should take away the meter, and fix in lieu of it a temporary connexion.

Mr. MANISTY: Knowing the number of burners which that would supply, can you arrive at a pretty accurate conclusion as to the quantity of gas that will be used?

Witness: If you know the number of burners, you can estimate the quantity.

Lord Chief Baron KELLY: You mean without the meter, by means of that connecting-pipe, and knowing the number of the burners?

Witness: Yes, or we should take the consumption for so many nights previously.

Lord Chief Baron KELLY: You would require to know how many burners were lighted, and how long they continued alight.

Witness: Yes, or take the average consumption.

Mr. MANISTY: Supposing the gas is not going to be used, what is the precaution you then take to prevent risk?

Witness: I should then take away the union from the main-tap, and on that tap I should screw an iron cap. These caps are kept in stock for the purpose, and they are tightened on the tap with tongs.

Cross-examined by Mr. COLERIDGE: There is always something at the end of the service, by the main-tap, to which you can screw a cap. Sometimes the iron pipe is continued still higher up, and is attached to the lead pipe with a union; but if you screw the cap to the iron pipe, it is the same as screwing it on to the main-tap. In practice we never find meters wrong by 43,000 cubic feet—they never vary so much as that. If such a difference should be found, it would rest with the gas company whether they continued the supply through it. It would not be an element in my consideration in determining whether I should make a temporary connexion on removing the meter. The consumption of gas in such a case would be estimated by the consumption of a similar period in a corresponding quarter of the year. If there had been no corresponding quarter, I do not know how I should get at the consumption. If the meter were wrong to that extent, the supposition would be that it did not register at all, or that the gas had been obtained surreptitiously. If the gas were simply turned off at the main, it would for the time effectually prevent any escape when the inlet-pipe was disconnected from the meter. The fittings inside the house, with the exception of the meter, generally belong to the consumer. The meters are usually rented from the company supplying the gas. They get out of order sometimes, and require to be taken away and repaired. When removed for that purpose, I think it would be a very unwise thing to put a bung in the end of the service-pipe; it would be an insecure way of stopping it, even with the use of white lead. The orifice of the pipe is not adapted for a cork, and there would be a difficulty in driving it in tight, as the orifice is not tapered. Of course, if it could be driven in tight and made sound with white lead there would be no leakage, which is the thing to be apprehended, and not the forcing out of the bung.

Mr. COLERIDGE: Then do you really mean to say that it is difficult to force a cork in and fasten it round with white lead?

Witness: Yes.

Mr. COLERIDGE: And that if it were done, the gas would escape in appreciable quantities?

Witness: Yes.

Mr. COLERIDGE: So as to produce an explosion?

Witness: Yes.

Mr. COLERIDGE: How long do you think, supposing it were forced in and fastened with white lead, it would take to escape in sufficient quantity to blow up a house?

Witness: If it were tight it would not escape at all.

Mr. COLERIDGE: Did you not tell us, last time, that it would escape through the bung?

Witness: I said, last time, that bungs were porous, and that they want great pressure to make them tight.

Mr. COLERIDGE: Then do I understand you to say that, the cork being porous, the gas would escape through the pores of the cork in such appreciable quantities as, in a year's time, to produce an explosion?

Witness: That would depend upon the size of the room.

Mr. COLERIDGE: Assuming the bung to be stuck in tight, and fastened round with white lead, do you think 2 cubic feet of gas would escape in a year?

Witness: Oh, yes; it would not be sound for a week. The gas would decompose the cork, and come out through the pores. The only way effectually to stop the end of the pipe, except a cap is used, is to solder it up.

Re-examined by the SOLICITOR-GENERAL: The fact that if the bung were forced in and made tight the gas would not escape does not alter my statement as to the ordinary practice of using a cap. It would be impossible to fix an iron cap upon the inlet-pipe itself, as that is only lead. The union by which it is connected to the meter is never made taper inside; usually it is burred there. The gas companies exercise complete control over the meters, whoever the fittings belong to, and it rests with them to make the pipe secure when removing the meter. The three chief kinds of burners used are the fish-tail, bat's-wing, and Argand, and it is pretty well known without a meter how much gas each kind will consume.

By the COURT: An iron cap is always an effectual mode of stopping the orifice, whatever may be size of the pipe or the mode of construction of the tap. I should not use a bung in a service-pipe, nor any other contrivance than a cap. They are made of regular sizes, and every one in the trade uses them.

Thomas Parnell, examined by Mr. POLLOCK.

I am a gas-fitter, and have been so for many years. I have had much practical experience in the removal of meters, and other things connected with gas-fittings. Supposing we have occasion to remove a meter for some hours, and the supply of gas is to be continued to the house, we unscrew the union at the top, and put on a connecting-pipe. If the supply of gas is to be cut off entirely, we put a cap on the main-tap. We always carry caps for that purpose, and they are screwed on with tongs or pincers. They cannot be removed without the use of a similar instrument. This is the only way I was taught to stop gas-pipes, and the only way in which I have seen it done in the trade for twenty years.

Cross-examined by Mr. HAWKINS: I have never tried a bung for meter fittings, only for stopping off a little pipe from the ceiling while I have been at work in the place. It does stop it in a manner of speaking, but as to the soundness of it I cannot say. It stops a portion of the smell; I cannot exactly say. I should think it does not entirely stop it. I have very seldom indeed used a cork to prevent an escape of gas. I do not know how often. I may have done so, but not often, because I think it is a very unsafe mode. Corks are porous, and not proper things to be used. If ever I have used them, it has been only with a three-eighths pipe. I cannot say how many feet of gas would escape through a cork in twenty-four hours. I cannot say whether there would be half a foot or any appreciable quantity. There is no difficulty in putting a cork into a pipe, the difficulty is in getting it out. According to my experience, they are so loose in that when you want to get them out they slip further up. I have known this to my sorrow, and I have had in consequence to cut off a piece of the pipe.

Mr. HAWKINS: Do you think a bung of that sort [handing one to witness] could not be screwed into a pipe?

Witness: I do not consider that I could, as a practical man, use it; I do not consider it a safe and proper mode.

Mr. HAWKINS: Assuming, for one moment, the possibility of fixing that small bung tightly in a gas-pipe, tell me how many cubic feet of gas would pass through it in a lifetime—a very long lifetime?

Witness: I cannot enter into those matters, as to how much gas would pass through; I only say it is not a proper way of doing it.

Mr. HAWKINS: Why not?

Witness: Because I consider it is not safe. I could never rest if I had been to a place and had left a cork in a pipe like that.

Mr. HAWKINS: Then I advise you, so far as you are concerned, to use a cap.

Witness: It is always open to any one to tamper with a bung when they see it in.

Mr. HAWKINS: You mean to say that they might take the bung out?

Witness: Yes.

Mr. HAWKINS: You said just now the difficulty was to get it out. Do you think a man disposed to steal 43,000 feet of gas could not take off a cap?

Witness: If he had money in his pocket to get the implements.

Mr. HAWKINS: Or credit—or if he stole the tongs?

Witness: Yes.

Re-examined by the SOLICITOR-GENERAL: A cap could only be removed by a person furnished with a pair of tongs. I have never used a bung to meter-fittings. I have only used a cork for a small nose-pipe to brackets. I always make good my work before leaving the place.

Mr. *Wm. Humphreys*, examined by Mr. MANISTY.

I am the manager of the gas-works at East Barnet, and have been there for some years. Before that I was connected with the gas-works at Winchester a good many years, and superintended the laying of mains and service-pipes, fixing and removing meters, and everything else connected with the business. When a meter is to be taken away, and the supply of gas is intended to be continued, I should put on a temporary connexion. That is the usual thing. If the gas is not to be used, I should screw on an iron cap like the one produced to the end of the pipe, so as to secure it. That is the proper and ordinary mode.

Cross-examined by Mr. COLERIDGE: I think in the latter case the insertion of a cork would not do. It would be a very unsafe and uncertain mode; it is dangerous, too, because it might be so easily tampered with by a person who wanted to get gas surreptitiously; or it might be removed by a child, or any one about the place. Of course that would depend upon the position of the pipe; but the great objection to it is, that it would be a most untradesman-like method of stopping the pipe, and no one who knew anything about his business would do it so. There would also be a danger of the escape of gas, not through the cork itself, but at the sides. It would not be safe, even for a night, to leave a cork, coated with white lead, in the end of a pipe. It is almost impossible to put a cork in properly; I have tried to do so frequently as an experiment, to ascertain whether the gas would escape. I think it has nothing to do with this case when I began to make those experiments.

Re-examined by the SOLICITOR-GENERAL: I have tried it, and found there was an escape. It is an untradesman-like way to stop a pipe in that manner.

Mr. *John Kirk*, examined by the SOLICITOR-GENERAL.

I am out-door foreman at Messrs. Johnson Brothers and Co.'s metal-works, and have been so for eight years. The whole of their business consists of gas-fitting. I have had great practical experience both there and elsewhere. Since I have been in business I have had scores of these caps in constant use. They are capable of being used again and again to any extent.

The SOLICITOR-GENERAL: As a practical gas-fitter, what do you say is the mode of stopping the escape of gas when you take away a meter?

Witness: By the use of an iron cap. That has been my practice always since I have been in business.

Cross-examined by Mr. HAWKINS: I have detached many meters, but I never used a bung. I was never taught to do so in the first place, and I do not consider it would be sound. I believe you cannot put a bung—such a one as you would obtain from a public-house cellar—into a pipe so as to prevent any escape of gas. The bung produced is an exceedingly good one, and of a better quality than you would procure in that way, but I would

not undertake to put that in any pipe; the gas might escape round the sides.

Mr. COLERIDGE: Supposing some one more clever than yourself did it?

Witness: I am not here to speak for the bung; the bung can speak for itself. It might escape round the sides.

Mr. COLERIDGE: But supposing it to be screwed tight into the pipe, do you suppose the gas would escape?

Witness: I cannot answer that question at all.

Mr. COLERIDGE: You mean to say that your science does not enable you to state?

Witness: No.

Mr. COLERIDGE: Do you think any gas could escape *through* that bung, if it could not escape round it?

Witness: I know nothing about that.

Mr. COLERIDGE: In fact, you know nothing at all?

Witness: No.

Mr. COLERIDGE: Then I agree with you.

Re-examined by the SOLICITOR-GENERAL: I have never used a bung myself, and have never known one to be used by persons in our employ, and therefore whether gas will get through the bung or not I do not know.

The SOLICITOR-GENERAL: The bung produced by my friend, Mr. Coleridge, is a kind of prize bung discovered by the Gaslight and Coke Company.

Mr. *Charles R. Mathews*, examined by Mr. MANISTY.

I am a gas-fitter, carrying on business in High Street, Bloomsbury, and have been in business above 20 years. During that time I have had considerable experience in taking down meters and doing what is necessary to the pipes afterwards. If the meter is to be away for a night, and there is a male thread in the pipe, I should put a cap on it; and if there is a female thread, I should put in a plug. Plugs and caps are kept by gas-fitters for this purpose, and this is the usual mode of doing it.

Cross-examined by Mr. COLRIDGE: I do not use bungs. I have used small corks for interior fittings. I think the bung produced might prove treacherous. Corks are liable to expand and collapse. They might do for a temporary purpose. If I were dependent for all the light I had upon the gas that would get through a bung, I should not have much. Bungs are not kept for that purpose. We only use corks when at work upon interior fittings. Just for the time being the pipe stopped in that way is practically secure. If it fits the orifice and is covered with white lead, it would do for a temporary purpose quite well.

Re-examined by the SOLICITOR-GENERAL: I should only use it if I were shifting a light from one side of a room to the other. In my judgment, it would be an improper mode of stopping a pipe to use a bung in such a case as the present.

Mr. POLLOCK having put in the correspondence between the solicitors, with reference to the proposed arbitration should the finding of the jury be against the defendants,

This closed the plaintiff's case.

Mr. HAWKINS said he had the honour to appear, with his learned friends, on the part of the Gaslight and Coke Company, to resist this action, and he was very happy to say that on the present occasion the case could not be affected by any of those prejudices which were sometimes introduced when the questions in dispute were between a public company and a private individual; because they all knew that this was substantially an action by an insurance company in whose office the premises in Leicester Square were insured, that the plaintiff was represented by the solicitor for that company, and that the action itself was conducted at their expense, and not at the expense of the private individual whose name was prominently used in these proceedings. Indeed, his friend, the Solicitor-General, in introducing the case, stated that in reality the plaintiff was sueing as trustee for the insurance company, and, therefore, he (Mr. Hawkins) could approach the consideration of the questions involved without any of those fears which must be felt when opposing an individual who had suffered a great loss and inconvenience by that which turned out to be a very unfortunate catastrophe. The whole question on the present occasion would be whether or not the jury were satisfied, upon the evidence which they had heard, that the defendants had been guilty, through their servants, of negligence. He believed he should be able to satisfiy them beyond the shadow of a doubt that there was not one particle of evidence as to negligence attributable to the servants of the company, but that this accident, which had resulted in a serious loss to the insurance company, was brought about solely and entirely by the grossest carelessness and the grossest negligence of others. It seemed to him that the case, as presented by the plaintiff to the jury to-day, was presented very barely and very meagrely. There were two or three witnesses who, it occurred to him, ought to have been called before them, who could have given very important testimony on the subject, and which might long before this have induced the jury to form a pretty shrewd opinion as to how the gas was suffered to escape, and as to how the fire took place. But on this occasion he had not that evidence to deal with, for his learned friend who appeared on the part of the plaintiff, had thought proper to keep back the testimony of those whom he ought to have called, and who he knew must have considerable knowledge of the subject. First of all, there was Mr. Bloom himself, who was the occupier of the house, and who was there from the time the gas-fitters went there, early on the day of the explosion, until a quarter-past four o'clock in the afternoon—Mr. Bloom, whom they knew on the other side the gas company had charged with fraudulently and surreptitiously appropriating to himself originally no less than 43,000 cubic feet of gas without paying a sixpence for it, and whom they knew perfectly well the company had charged with endeavouring, on the night in question, to take gas for the supply of his rooms, knowing that the meter had been removed, and that it was never intended a further supply of gas should be given to him until that meter was restored under the circumstances to which the attention of the jury would be directed. But Mr. Bloom was not present, and his absence was not accounted for. He remembered that on the last occasion it was stated (he did not mean to say that any one believed the story) that Bloom had been sent for on urgent business to Germany, where his personal presence would be required for a fortnight. But that was in December, 1865, and here they were at the end of 1866, and Bloom still not called, nor any attempt made to account for his absence. Mrs. Bloom, too, who was in the house at the very moment the explosion took place, who this day had been in court, and who was called on the last occasion, was not now produced to give the smallest explanation of the matter, nor to show where her husband was. But if there were nothing in all the suggestions which he (Mr. Hawkins) had made with regard to Bloom, how came it that this man, who was himself a considerable loser, as stated, by the fire, had not thought fit to bring an action, or make any claim upon the gas company for alleged negligence in doing the very work which he himself employed them to do? Before commenting upon the evidence for the plaintiff, he would venture to state the facts of the case on the part of the defendants, and which facts would hereafter be proved by witnesses. The billiard-room and passage, and the saloon over the billiard-room at Saville House, were lighted by the 50-light meter, which stood behind the front or entrance door; all the rest of the house being supplied by the 100-light meter at the end of the passage, with which this inquiry had nothing to do. The billiard-room, down to the month of April, 1864, had been occupied by a person of the name of Roberts, and on his quitting the occupation, according to ordinary custom, the inspector of the gas company, a Mr. Sewell, was sent for to take the state of the meter. On that occasion, Mr. Sewell would tell the jury, that the index of the meter showed a consumption of 541,500 cubic feet of gas, and knowing that Roberts was not going to use the billiard-room again, and that there was no one to pay for any gas which might be consumed there, he disconnected the inlet-pipe from the meter, and in that inlet-pipe, with his own hands, he inserted a quantity of tow, so as to prevent the further passage of the gas; he then reconnected the inlet-pipe to the meter, and left it so until some new contract should be made with the gas company, such as would be shown to have been afterwards attempted by Bloom. In the month of July following Mr. Sewell again looked at the meter, and found that the index showed precisely the same figures, proving that no gas had passed through the meter; and there was no user of the meter until Bloom came into occupation of the house in September, 1864, a few months before the fire, at which time the successor of Sewell again examined the state of the index, and found it still the same. When Bloom entered into possession he made a contract with the gas company for a supply of gas through the 100-light meter, but no mention was then made of the 50-light meter. Bloom having contracted thus with the gas company, began at once to use gas in the passage and in the billiard-room, as well as, occasionally, in the saloon above. One of the witnesses examined for the plaintiff stated that the gas was burned in the saloon for three weeks, three nights a week with 20 burners, knowing at the time, as he must have known, that the supply came through the 50-light meter, for the witness, in re-examination, stated that he was in the habit of turning on the tap behind the door. In the month of February, 1865, it was suggested that Bloom desired to have a supply of gas to the saloon, and thereupon Cazally, the then inspector of the company, went to the premises for the purpose of getting a contract signed, and a deposit paid on the 50-light meter. Down to that time, neither Cazally nor the gas company had any knowledge of any gas having passed through that meter since the termination of Roberts's tenancy. To the great surprise, however, of Cazally, he found that the meter now indicated a consumption of gas during the interval of nearly 44,000 cubic feet. He mentioned the circumstance to Larven, who declared that Bloom had not used and would not pay for it, although he knew at the time that certainly for three nights a week, during three weeks, 20 burners had been alight in the saloon, which could only have been supplied through that meter, and he knew too that the passage and billiard-room were supplied with gas in the same way, although no contract had been entered into with the company for the purpose. That that 44,000 cubic feet of gas not accounted for, and not paid for, had been consumed by Bloom was self-evident, for the meter was in perfect order, and there had been no escape of gas on the premises, or it would have been previously detected. After some conversation it was arranged that the gas company's men should call on the following day, which they did. There had been a suggestion made that the meter should be taken down, and replaced by a 30-light meter, as it would not consume so much gas, and the rent would not be so high, and Cazally, having his mind alive to the state of things, again took the state of the index, when he found that since the day before there had been an additional 500 feet of gas consumed. This was between one and two o'clock in the afternoon. Rose, the cellarman, who had charge of the gas on Bloom's behalf, was at home, and two men, named Klassen and Larven, were also there. A pair of steps was placed against the corner where the meter was, and the meter was detached from the inlet and outlet pipes. He (Mr. Hawkins) was not quite sure whether anything was said about the gas not being used, but certainly not a word was said about the gas being used that night. Bloom and Larven knew that the meter was taken down, and they both knew that no connecting-pipe had been put up; in fact there was no suggestion that one should be so placed. It was suggested that the meter should be put in the cellar till the new one was brought; and, as some complaint might be made of the smell of gas, two corks were obtained and placed in the inlet and outlet orifices. The man, before he left the steps in the corner of the passage, turned off the gas at the main-tap, and made inquiry of Rose, or some one else there, for a cork, in order that he might put it into the inlet service-pipe. This man, Downs, who would be called as a witness, would tell the jury that he did obtain a bung, that he covered it with white lead and grease, and, in the presence of Cazally, the inspector, drove it into the pipe; and both of these men would state that they saw it as closely fitted in the pipe as possible. The effect of that was entirely to prevent the gas escaping, because the opinion of the so-called scientific men, as to gas finding its way through a bung, was the purest absurdity and nonsense ever concocted. Not only did Downs force the bung into the pipe with his hands, but he hammered it in; and afterwards, having turned the gas on, tested its security by applying a light to it, so as to be sure that there was no escape of any kind. Finding there was none, he again turned off the tap, and instead of leaving the key where it was ordinarily kept, he deposited it behind the pipe, so that any one going into the corner would not have access to it. The men did not interfere with the gas again, and they afterwards left the house. Bloom was in the house for an hour, or more, after the operation was finished, and he might have removed the bung. He had ample opportunity to do so, and he (Mr. Hawkins) would like to have had Bloom present on this inquiry, that he might know what his proceedings were with the steps in the passage that afternoon. He contended that the whole of the evidence proved that when the meter was taken down it was intended that the gas should not be used again. In fact it would have been idle to take it down, it not being unsound or in any way complained of, if it had been intended to continue the supply, and no one for a moment pretended to say that a connecting-pipe was to be used? The men took no connecting-pipe with them, because it was not intended to have one put up; there was a sufficient connexion through the meter if the supply of gas was to be continued, and therefore why put up a make-shift? It was impossible to come to the conclusion that it was intended to use the gas. But, independently of that, he would prove that the evidence of Larven on this point was false, by showing what he stated on the last occasion, and that it was not even suggested that a connexion should be made. The fact was, the officer of the company suspected Bloom, rightly or wrongly, of having taken through this meter 43,000 feet of gas without paying a sixpence for it; and was it therefore to be supposed that he would trust Bloom with an unlimited supply through a connecting pipe, when there was a meter already fixed which correctly registered what

he used. Larven, on the last occasion, said not a word about the gas-men promising to connect the pipes after the meter was removed, he only stated that they promised to "secure" them. Of course, he (Mr. Hawkins) was not in a position to show what was done when the men left; Bloom not having been called, and looking to all the circumstances under which this action was brought, this in itself, was a very mysterious affair. Upon the testimony, however, of Roth and Rose alone, he submitted that there was an end of the case; for, but for the grossest negligence on the part of Rose, the accident never could have occurred. In fact, he would go the length of saying that even if no bung or cork were used, there was a perfect answer on the part of the gas company in the testimony of the plaintiff's own witnesses, who admitted that the gas was turned off at the tap, and that the accident arose not from the negligence of the company's men, but from the reckless conduct of Rose in turning on the gas and doing what no human being in his senses would attempt to do, take a lighted candle to the spot where the meter had been. The jury would remember that the fittings inside the house were the property of Bloom. The gas company in their own pipes conducted the gas to the outer wall of the house, and from that spot, with the single exception of the meter, all the pipes within the house belonged to the tenant. The pipe which conveyed the gas to the inlet of the meter ran up at the right-hand corner, and at 6 feet above the level of the floor was the tap by which the gas was turned on. It was not placed in a situation in which a person could accidentally turn it on. It was above the reach of an ordinary man's head, and the key required to be turned by the hand, which must be raised for the purpose. It was not disputed on the part of the plaintiff that when the gas company's servants left the house they had turned off the gas in the corner, and that unless this tap 6 feet above the floor had been turned on by some person, no gas could have escaped. What happened in the course of the afternoon? The gas company were bound to do their work with ordinary skill and carefulness, but they were not responsible for the want of ordinary precaution and care on the part of others. They were bound not to leave the gas in an insecure state, and they did not do so; for if Rose, knowing perfectly well that the meter had been taken away, and that, except a connecting-pipe had been put up, the gas, when the tap was turned, must escape into the house—knowing this, if he had taken ordinary precaution, no accident would have occurred. The gas, even supposing no cork had been inserted in the pipe, was perfectly secure until the tap was turned; and, therefore, it was the grossest negligence on the part of Rose that brought about the explosion. He (Mr. Hawkins) was assuming that there was no bung in the inlet-pipe, that the gas was simply turned off at the tap, and he did so because he knew what had been said by a high authority in this court, that if this alone had been done it would be amply sufficient to protect the defendants against a charge of negligence. But he would go further, for although without this next piece of evidence he should submit there was no case, yet he would prove that the orifice of the pipe was filled up safely and securely with a bung. And he would ask the jury whether there had ever been such childish nonsense talked before as was talked by some of the witnesses. He was not going to say that a plug or a cap might not be used, or that some people did not use the one and some the other, but he denied that there was any universally recognized mode of plugging up the end of a pipe through which gas had been passing. The witnesses already examined proved that there was no such universally recognized mode of doing it. One of them stated that a ¾-inch pipe might be stopped with cork, and it could not be pretended to assert that, if a bung were inserted and fixed securely, there would be any escape. But then it was said that a bung might be taken out. Of course it might. A fraudulent man might take out a bung, and so he might a cap. He (Mr. Hawkins) would undertake to show, by a body of witnesses, that the use of a cap was not the universal method. He would call gas-fitters of great experience, who would state that if a bung were properly used it was amply sufficient for the purpose, unless some dishonest person took it out. The practice of using bungs for this purpose was common, and it was revolting to one's common sense to say that it could not be done. But then the witnesses on the other side talked about a bung being porous. Was not that equally nonsense? How much gas would any one believe could pass through a sound bung with all the pressure the gas company could apply? Would any one believe that half a dozen cubic feet would be forced through in the course of a night? The thing was absurd. He would call a quantity of evidence to prove that the stopping of a pipe with a bung was very commonly practised, and that, though some gas-fitters might prefer one mode of proceeding and some another, the use of the bung was a perfectly safe mode where the removal of the meter and the discontinuance of the supply of gas were only temporary. His case, in substance, was this:—First of all, that there was no negligence proved on the part of the company, but that, on the plaintiff's own evidence, the accident was brought about by the negligence of Rose; that the men turning off the gas was itself sufficient precaution on the part of the company's servants, because, unless it had been wilfully turned on again, no gas could have escaped; that nothing was said to justify Bloom or his men in supposing that a connecting-pipe had been put on when the meter was removed; and that, if it had been intended that Bloom should continue to use the gas, it would have been the idlest thing in the world to take away the meter till a fresh one was brought. He would show further, that if any other precaution was necessary than the turning of the tap, that precaution was taken; that the mode adopted by the company's servants was a common and usual one, and sufficient for a temporary purpose, and, in the result, it would be for the jury to say whether the plaintiffs, the insurance company, had satisfied them, as they were bound to do, that this accident arose from the negligence or want of care of the defendants. If this matter were left in doubt, and he believed it would not be, the defendants were entitled to the benefit of it, it being the duty of the plaintiffs to establish their case beyond all possibility of doubt.

(*To be concluded.*)

Miscellaneous News.

PARÀ GAS COMPANY, LIMITED.

The Ordinary General Meeting of this Company was held at the Offices, Victoria Street, Westminster, on Friday, Dec. 28, 1866—Sir WILLIAM CLAY Bart., in the chair.

The SECRETARY (Mr. Arthur C. Blunt) read the following report of the directors:—

The directors are happy to have it in their power to announce to the shareholders that the state, condition, and prospects of the company are in a high degree satisfactory.

When they had the pleasure of meeting you in December last, they ventured to anticipate that the revenue of the then current year, namely, from the 30th of September, 1865, to 30th of September, 1866, would, independent of any increase of public lights, be between £15,000 and £16,000. By the account appended to this report you will perceive that it has amounted to £15,967, or £2590 beyond the previous year.

Your directors had fully expected to have been enabled to inform you that the additional public lights had been established, but the continuance of the war between Brazil and her allies and the State of Paraguay has diverted the public funds from internal improvements, however valuable—has to some considerable extent paralyzed individual enterprise, and, consequently, impeded that development of the resources of the country, upon which undertakings of the nature of the Parà Gas Company must mainly depend for their advancing prosperity.

Parà, however, from its distance from the seat of the war, has suffered less from its depressing influence than the southern provinces of the empire, and your directors are sanguine in the expectation that an increase of the public lights, so desirable for the inhabitants of Parà, on the one hand, and so completely within the power of the company to deal with, on the other, will not be long delayed.

They entertain this expectation with the more confidence as recent advices from their manager at Parà state that the Assembly had passed a resolution in the estimates to increase the public lights; he did not know to what extent, nor had the president yet sanctioned the vote of the Chamber, but they repeat their conviction that tidings of an increase in the public lights, to a greater or less extent, may shortly be expected.

A comparison of gas consumed in the six months ending the 30th of September, 1865, with the six months ending last September, shows an increase of the weekly average in the latter period of 23,328 cubic feet, or 434,086 feet against 410,748 feet.

In the year ending last September, as compared with the previous year, there had been an increase

Of public lamps and establishments	44
Of private lights	1,166
Of meters fixed	248

Much in the opinion of your directors may be expected from the opening of the Amazon to the flags of all nations, which the Brazilian Government is about to carry out; it cannot but add greatly to the growth and prosperity of Parà, with which the prosperity of the company is so intimately mixed up.

The sale of the residual products is steadily progressive; for coke there is now a ready sale at remunerative prices, and, from measures at present under consideration, your directors hope to be able to effect some economy of fuel, and also to obtain some not inconsiderable profit.

They announced to you in December last that they had thought it right to take over from Messrs. Lambert their gas-fitting stock and business. This operation has fully answered the expectations with which it was undertaken. The capital invested in gas-fitting pays a fair interest, while beyond doubt it tends greatly to facilitate and accelerate the adoption and increase of gas-lights by private individuals.

The directors have great pleasure in stating that the relations between the company and the Government are of the most satisfactory character.

It is needless, of course, to add that the existence of this friendly feeling must greatly tend to facilitate the discharges of the duties the company have undertaken.

The works in the possession of the company are in a state of perfect efficiency, and competent without further outlay to the production of a two or three-fold greater quantity of gas than is at present required for consumption. On this point, as well as in regard to the general character of the persons in the employment of the company, the directors cannot but believe that the following extract from a letter recently received from their manager, Mr. Wilson, will prove as satisfactory to the proprietors as it is felt to be by themselves:—

"I am happy to be able to conclude with the assurance that the officers employed under me in the management are steady, regular, and thoroughly efficient; that the workmen, most of whom are natives, both in the works and in the gas-fitting department, are wonderfully well initiated in the business; showing an amount of intelligence which, at one time, I scarcely looked for; and that your works, originally well constructed, having been afterwards improved in several minor details, are, at present, in an almost perfect state of preservation and of working capacity."

Upon a comparison of the receipt and expenditure of the company for the half year ending 30th September, 1866, your directors recommend a dividend at the rate of £6 per cent. per annum, free of income-tax, on the fully paid shares of the company, and on the instalments on the new shares paid up to that date.

Two of your directors, namely, Sir William Clay, Bart., and Captain John Walrond Clarke, retire by rotation, but are eligible for re-election, and offer themselves accordingly.

Mr. Ernest Oswald Coe and Mr. Joseph Quick, jun., the auditors of the company, retire from office, but are eligible for re-election, and offer themselves accordingly.

Dr. *Balance-Sheet, Sept.* 30, 1866. *Cr.*

To Share instalments—				By Works, including gas-fittings, &c.		£113,193	5 4
Share capital	£125,000			Coals		4,971	15 10
Shares uncalled	11,234			Public lights, residual products, &c.		2,023	19 11
		£113,766	0 0	Remittance account		1,445	13 9
Loans		5,000	0 0	Petty cash — balance at Parà		18	18 0
Profit and loss		3,796	18 6	Messrs. Glyn & Co. —balance in their hands		515	16 4
				Messrs. Mauà & Co. —balance at Parà		393	9 4
		£122,562	18 6			£122,562	18 6

Dr. *Revenue Account for the Year ending Sept.* 30, 1866. *Cr.*

To Coals carbonized		£4,408	2 6	By Balance brought forward		£4,131	19 2
Wages		1,664	0 6	Arrears received		2,013	15 11
Salaries of officers and directors		2,249	1 9			£2,118	3 3
Repairs		59	13 8				
Rent		150	0 0	Public lights		8,972	17 7
Lime		63	3 9	Private lights, &c.		4,414	19 8
Trade charges, &c.		269	4 8	Meter-rental		297	14 6
Dividends		5,425	9 1	Residual products, &c.		1,750	12 9
Balance carried forward		3,796	18 6	Gas-fitting department		531	6 8
		£18,085	14 5			£18,085	14 5

Mr. STERRY moved and Mr. D. A. RIVOLTA seconded—"That the report of the directors to the shareholders, as read by the secretary, be and the same is hereby approved and adopted."

A SHAREHOLDER: I should wish to ask whether the two items, "Share capital" and "Loans" are all the liabilities of the company?

The CHAIRMAN: Yes; that is all. Of course there are the current expenses going on, but against them there is the revenue coming in. Gentlemen, I really do not know that I have much to add to the report you have heard read, and which we have endeavoured to make as explanatory and full as we could. I think those whom I have the pleasure of addressing will agree with me that it is a report in a very high degree satisfactory. On the part of my colleagues and myself I can say that it is not in any respect a report which holds out prospects at all more favourable than exist in reality. On the contrary, it would have been very easy to give you a report holding out prospects of greater advantage and profit, had we felt so disposed. Gentlemen, there is one point alluded to in the report on which I might say a word, and that is as to the state of the works. All that is here said is fully and more than fully justified by the facts. The works were originally admirably formed; they were constructed in a very solid and complete manner, and upon a scale which would enable the company to supply twice or thrice the quantity of gas we were likely to have an immediate demand for, without any further extension. The outlay upon the works would, in point of fact, enable us to light the city of Parà should it increase twice or threefold in extent. With regard to the current expenses, I may explain that of course those will not

go on increasing with the increase of our revenue, because a great many of the charges are susceptible of very little enlargement. For instance, all these items—wages, salaries of officers, directors, rent, trade charges—all these will remain pretty much as they are, notwithstanding an increase in our business. There are things that will, of course, go on increasing the more gas we have to make; there will be more coal, a little more lime, and probably some other small matters; but the meeting will at once see that our expenses will not hereafter go on increasing according to our income. Our works are adequate to an infinitely greater amount of business than we have to do, and all those charges to which I have just referred are permanent charges, and will scarcely increase, if at all, with the increase of our business and manufacture. There is another noticeable feature in the report, to which Mr. Wilson, in his letter, refers—viz., that he has succeeded—and it is much to his credit that he has done so—in carrying on the works almost entirely with native workmen. He finds that, after his training, they are competent to discharge all the duties they have to perform; and of course their employment is at considerably less expense to the company, because they have much lower wages than we should have to pay if we sent out persons from this country. We were in hopes that we should be able to state to you on this occasion exactly the amount of the increase in the public lights, but, although we have delayed till the last moment the printing of our report, we have not been in a position to do so. I have very little doubt, however, that the increase will take place. As stated in the report, we know the Chamber has passed the vote for the increase of the lights, but our manager has not sent us word what the amount of the increase would be, nor do we know that the vote has received the official sanction of the President. There is very little doubt that he will appove the vote of the Chamber, and that there will be a greater or less increase in the public lights. Now, assuming there to be an increase to the extent we think ourselves entitled to expect, it would add £2000 a year to our revenue. We may, from our experience hitherto, hope there will be an equal amount added—partly from the increase of the private lights, and partly from the rental of gas-meters, and partly also from the increased sale of residual products. Although, gentlemen, I have never yet, when I have had the pleasure of meeting you, indulged in too sanguine expectations—because none of the anticipations I have expressed but have been surpassed by the reality—yet I venture myself now to anticipate that the increase of our income for the current year will not fall far short of £4000. We may be disappointed if we do not have the increase in the public lights which we expect; but suppose we should have the increase in the public lights, which we feel ourselves justified in expecting, the increase in our rental will not be less than £4000, and as, in round numbers, our rental in September last was £16,000, I think I may say that in the current year I shall be disappointed if it does not amount to £20,000, and, as I have already said, the increase in the expenses will not be in an equal ratio with the increase of the income. I think, therefore, that it is a prospect very gratifying, and fully as favourable as any we have ever ventured to hold out to our shareholders.

The motion for the adoption of the report was then put, and carried unanimously.

Mr. STERRY moved—"That the interim dividend paid to the shareholders at the rate of 5 per cent. per annum for the half year ending the 30th of June last be and is hereby confirmed, and that a dividend for the half year ending the 31st inst., at the rate of 6 per cent. per annum, free of income-tax, be now declared, and made payable on and after the 18th of January next."

Mr. D. A. RIVOLTA seconded the motion, which was at once adopted.

The retiring directors, Sir William Clay, Bart., and Captain John Walrond Clarke, were re-elected.

The retiring auditors, Messrs. Coe and Quick, were re-elected.

Mr. C. M. VIALLS moved—"That the best thanks of the meeting be given to the chairman and directors of the company for their efficient services in the conduct of the company's affairs in the past year."

Mr. CRAWLEY seconded the motion, which was cordially adopted.

The CHAIRMAN: Gentlemen, I have to thank you, on the part of my colleagues and myself, for the honour you have just done us. It is exceedingly gratifying to us to have to make so favourable a report as we have done to-day, and I assure you again that that report is not only not exaggerated, but is in reality less favourable than we should have been justified in making it. It is very gratifying to us to have your approbation, and I have no doubt if you thought we had worked earnestly and zealously for the promotion of your interests, you would have done us the honour of a vote of thanks, even if the result of our exertions had not been so favourable. It is therefore doubly agreeble to us that we are able to present before you so flattering a prospect and view as the prospects of the company now are. I only hope this may long continue, and that the next time we have the pleasure to meet you we shall be able to lay before you as good a report. Gentlemen, your approbation is our best reward, and the best incentive to our future exertions.

The proceedings then terminated.

RATCLIFF GAS COMPANY.

An Extraordinary General Meeting of Shareholders in this Company was held at the Company's Offices, Back Road, on Friday, the 28th of December, 1866—JOSEPH HENRY GOODHART, Esq., in the chair.

The CHAIRMAN, in feeling terms, referred to the great loss which the company had sustained through the lamented decease of the late Samuel Foulger, Esq., who had for so many years, in his directorial capacity, rendered valuable aid to the company, and promoted its interests in various ways. He then called upon the proprietors to elect a director in the room of Mr. Foulger.

Mr. D. P. JOHNSON moved, and Mr. PADDON seconded, the following resolution—"That Thomas Morrison Fairclough, Esq., be elected a director of the company, in the place of the late Samuel Foulger, Esq., deceased."

The resolution was unanimously carried.

Mr. FAIRCLOUGH, in returning thanks, assured the proprietors that he should at all times use his best exertions to promote the interests of the company, and thanked them for the handsome manner in which he had been elected to fill the post of director.

The CHAIRMAN then stated that, as Mr. Fairclough had been elected a director, his position as auditor was necessarily vacated; and left it to the shareholders to nominate some one in Mr. Fairclough's place.

Mr. PADDON moved, and Mr. WILKINSON seconded the motion—"That John Sander, jun., Esq., be elected an auditor of this company, in the place of Thomas Morrison Fairclough, Esq., resigned."

Mr. JOHN BADDELEY moved, and Mr. PINCHIN seconded, the following resolution—"That Henry Laurence Hammack, Esq., be elected an auditor of this company, in the place of Thomas Morrison Fairclough, Esq., resigned."

There having been no other candidate put in nomination, a show of hands was taken, when there appeared a majority of five in favour of Mr. Hammack, and he was thereupon declared duly elected, in the absence of any demand for a poll.

Mr. HAMMACK, in a few appropriate remarks, acknowledged the vote, and returned thanks for the same; after which, on the motion of Mr. NUTTER, seconded by Mr. JOHNSON, the customary compliment to the chairman brought the proceedings to a close.

OTTOMAN GAS COMPANY, LIMITED.

The following Report of the Committee of Shareholders, appointed at the General Meeting, held September 10th, 1866, has just been circulated amongst the proprietors:—

"Gentlemen,—We have held several meetings, and have inquired into the affairs of the company, which, as an undertaking, cannot be said to have realized the expectations held forth in the original prospectus.

"At our request, the directors permitted the secretary to attend the meetings of the committee, for the purpose of affording information and producing books and papers.

"Herewith we furnish a full statement of the receipts and expenditure of the company, from the commencement, June 1st, 1862, to June 30th, 1866, and we commend it to your careful perusal. You will perceive that, though it was announced in the original prospectus that £50,000 would be sufficient capital, the sum of £70,500 has been spent without returning any dividend to the shareholders.

"By furnishing you with so full a financial statement, we are, to a certain extent, relieved of the duty of commenting thereon. We may briefly refer to two items, and state, as our opinion, that too much money has been spent upon 'Plant' and 'Fees, salaries, and wages.' There has been a tendency generally to work this small company as if it were a large one.

"In the original prospectus reference was made to carefully prepared estimates, as showing a probable dividend of from 12 to 15 per cent. The data, however, whereon these estimates were based, would appear to have been furnished by the *concessionaire*. It was also stated that the concession contained clauses for the protection of the company's interests. No provision, however, was made for the collection of the rate, or the enforcement of its payment.

"The half-yearly reports are, as a rule, somewhat too highly coloured, and the facts and anticipations dwelt upon therein are not always well grounded. The reports of Sept. 11, 1863; Aug. 10, 1864; March 10, 1865; Sept. 2, 1865; and March 3, 1866; are all more or less open to this objection.

"A careful consideration of the consulting engineer's reports leads us to the conclusion that the works at Smyrna have not been managed so economically as they might have been in respect of the manufacture of gas. The leakage has been great, and the amount of gas produced per ton of coal has been very variable, and frequently low in quantity. This should not result from the state of the plant, which, in our opinion, has been built in a very expensive manner, and on too large a scale for the requirements of the company. Messrs. Laidlaw and Son have been paid some £25,000 for building the gas-works, which *ought to be* perfect.

"The immediate cause of the present dead-lock in the affairs of the company has been a misunderstanding between the authorities and the company respecting the rate for public lights, its legality being questioned, and payment refused in most instances. After a careful study of the question, we are of opinion that this difficulty mainly has resulted:—1. From the stipulations of the concession not having been strictly observed, and the consent of the inhabitants, as well as the governing body, obtained to the assessment.—2. From Mr. Gandon being too eager to push forward the public lighting, and, though knowing that no definite time or mode of payment had been fixed, continuing the erection of the lamps.—3. From their having been no provision in the concession for the collection of the public rate, and the enforcement of its payment.—4. From the authorities taking unfair advantage of these oversights and errors.—5. From the company not being represented influentially at Smyrna, a simple manager not carrying sufficient weight with Orientals.

"Feeling that, though Mr. Gandon might be an efficient manager of gas-works, he was not equal to the position of representing the company in a controversy with the Pasha and Emlak Commission, the more especially as he had been mixed up with the dispute from the beginning, we addressed a letter to the directors on October 15th, commending to their serious consideration the advisability of immediately securing the services of some gentleman to specially represent the interests of the company during the negotiations respecting the public rate and its collection. A reply was received intimating that something should be done in the matter, but up to the present time the negotiations still remain in the hands of Mr. Gandon, and the question of public lighting still remains unsettled.

"It is to be regretted that the matter has been allowed to drag on for so long. The public lighting should have been stopped when it was found that payment could not be obtained. The arrears would then have been small in amount, and the question would have been settled long ere this.

"It is reported by the manager at Smyrna, that it has been discovered recently that the rate assessed for the public lights by the Emlak Commission, will not, when collected, come up to the agreed price per lamp by about 10 per cent. Moreover, he states that 10 per cent. will have to be deducted for bad debts, and 10 per cent. for expenses of collection, and that the public lighting will yield little or no profit.

"It is unfortunate that the company's funds should have been spent in too lavish a manner, and, consequently, that the interest on a round sum raised in addition to the capital, should have to be provided for. We do not think the opening at Smyrna so good as represented in the prospectus and reports, but still, probably, sufficient business could be done to yield a fair dividend on the original capital.

"Though we cannot hold out to the shareholders any hope of their receiving a moderate dividend for some time to come, still we think that good management may yet go far to atone for past errors of judgment.

"Turning from the past to the future, we have to state that, in our opinion, rigid economy, and a severe supervision of the expenditure, will be necessary to place the company in a sound position.

"In reference to the directors, we would recommend that their number be reduced to five; that no fees be received by them till a dividend out of profits of at least 3 per cent. has been paid to the shareholders; that they forego the sum of £700 (unpaid fees) for which they are entered as creditors on the books of the company, and that when they do receive fees, as per paragraph 2, the sum per annum do not exceed £550 (being at the rate of £100 each for four directors, and £150 for the chairman).

"We think that the company should be represented at Smyrna by a resident director, if possible (in addition to the manager of the works). Failing this, three or four leading merchants or brokers might be induced to act as a board of supervision, to assist the manager with advice, to take a kindly interest in the affairs of the company, and to strengthen its position on the spot.

"The gas manufacture should be closely watched. If the carbonization be good, and the leakage small, money will be saved, that up to the present time has been lost.

"The European quarter of Smyrna (where the works of the company are placed) should be thoroughly worked, and lighted up, before operations are extended to outside places. Not only will this plan be found sound and economical, but doubtlesaly it will lead to more business, and strengthen the company, as showing what they can do, for a brilliantly lighted quarter would be the best and most telling of advertisements.

"No new concession should attract the attention of the company until the present one has been fully worked, and made profitable.

"The assessment for the public lamps must be revised; for, though much profit on them be waived in consideration of their influence on the private lighting, still it is unreasonable to expect that the company can afford to light them at a loss.

"Touching the unfortunate dispute with the authorities at Smyrna, we have to repeat the substance of our letter to the directors (before alluded to), and to recommend that the matter be taken out of Mr. Gandon's hands, and placed in those of some influential person or persons, who should be requested to represent the company, and to arrange the public lighting question, subject to the voice and approval of the directors.

"Having now fulfilled our duty, and presented our report, we leave the matter in your hands.

"And remain, gentlemen,

"Your most obedient servants,

"HUGH OXENHAM.
"WILLIAM HENRY WINSOR.
"JOHN COLES.
"JOHN VAN VOORST.

"Mr. Knight (the remaining member) has been unable to attend more than the two first meetings of the committee.

"*December 17th*, 1866."

SUGGESTIONS FOR AMENDMENT IN THE METROPOLIS GAS ACT, 1860,

Agreed to at a Meeting of Delegates from Vestries and District Boards in the Metropolis, Dec. 20, 1866.

Clause 2. Amend by substituting *three* for *six* in the third line from the end of the clause.

Clause 5. Amend so as to include all the companies contained in the schedule to the Act.

Clause 23. Insert the necessary clauses to enable local authorities to consume gas by meter in the public lamps, and to pay for the same by average meter indication, limiting the number of meters to be attached to the lamps to 1 in 12 as a maximum, and 1 in 50 as a minimum.

Clause 24. Provide here that at all times the gas shall be supplied at such a pressure as to balance a column of water one inch in height in any part of any consumer's premises.

Clause 25. Alter quality of cannel gas to 25 candles, and common gas to 18 and 15 candles. Reduce grains of sulphur from 20 to 10, and absolutely prohibit sulphuretted hydrogen.

After clause 26. Empower the President of the Board of Trade to appoint a chemical board, at the expense of the gas companies, to regulate and alter, if necessary, the analysis and mode of testing the purity and illuminating power of all gas supplied to consumers by the different gas companies, with power to fix the mode and places for testing the gas; such board to report to the President of the Board of Trade.

That the testing places to be provided by the company outside the City of London shall be under the control and management of the Metropolitan Board of Works, and those within the City of London shall be under the control and management of the Commissioners of Sewers.

That the gas company shall be at liberty to send an officer to be present at the testing by the public officer; but the officer sent by the gas company shall not interfere in such testing.

That the Metropolitan Board of Works shall appoint officers to test the illuminating power and purity of the gas supplied outside the City of London, and the Commissioners of Sewers shall appoint officers to test the illuminating power and purity of the gas supplied within the City of London.

That such officers shall be authorized to test continuously, and report the result daily to the authority having appointed them; that every testing shall be registered and not the average only.

That the Metropolitan Board of Works and the Commissioners of Sewers shall each appoint a chief gas analyst to direct the operations of the testing officers; that the chief gas analysts shall receive daily reports, and submit and report on them weekly to the authority respectively appointing them.

If any complaint be made by the gas company as to the testing, there shall be an appeal to the chief analyst of the district, whose decision shall be final.

The weekly report, if unchallenged, shall be conclusive as to the experiments made.

That the expenses incident to the appointment of the testing officers and chief gas analysts shall be paid respectively by the Metropolitan Board of Works and the Commissioners of Sewers.

That in the event of the Metropolitan Board of Works, or the Commissioners of Sewers, making default in appointing such officers for the period of twelve months, the President of the Board of Trade shall have power to appoint officers, charging the cost of the same to the Metropolitan Board or the Commissioners of Sewers respectively.

Amend, alter, vary, or strike out such parts of clauses 27 to 34 in "The Metropolis Gas Act, 1860," inclusive, as are inconsistent with the new testing clauses.

Amend clause 37, by adding the words "to any other local authority or," before the words "to any private consumer," and by striking out the words, from the word "otherwise," to the end of the clause.

Amend clause 38, by substituting the word "land" for "companies" in the last line but two.

Clause 40. Amend this by substituting a maximum price of 3s. per 1000 for 15-candle gas, 3s. 6d. for 18-candle gas, and 4s. 6d. for 25-candle gas.

Clause 41. Add an improved form of accounts as a schedule to the Act, giving power to the President of Board of Trade to alter the form of account. The improved form should contain the following additional particulars:—1st. The cubic feet of gas sold at each distinct price. 2nd. The average price paid per ton for each kind of coal, with the tonnage of each.

Clause 42. Amend this so as to compel the companies to mark on their map the diameter in inches of all their mains laid under the public streets and roads.

Provide that a public auditor be appointed by the Metropolitan Board of Works, to examine the accounts of all the companies, independently of their own auditors.

Provide for a thorough examination by the Board of Trade of the capital accounts of all the gas companies, so as to furnish materials for a schedule to the bill, setting forth the real and proper amounts of capital, and the rates of dividend to which each company is entitled at the present time.

Sections 9, 12, 17, 26, 32, 33, 34, 41, 46, 49, 51, 53, of the Metropolis Gas Act, relate to penalties which may be imposed upon gas companies, and the committee of last session recommended that a more summary process should be enacted.

Provide that no new works shall be erected within seven miles from St. Paul's.

Provide that existing works shall be removed, within five years, outside the same area.

Provide that if not purchased by the Metropolitan Board that existing gas companies shall effect an amalgamation, so as to limit the companies to four—two north and two south of the Thames, with stations for gasholders.

Capitalization of profits to be prohibited, and where any portion of existing capital has been so created, limitation of dividends thereon to be fixed at 3 per cent.

Provide clause for deducting compensation for accidents and penalties incurred, from the 10 per cent. dividend, absolutely.

Provide clause that where any dispute arise between consumer and company, the disputant consumer should deposit a sufficient sum, as a guarantee of his *bonâ fide* objection to the amount charged, and that, pending the dispute, the gas shall be supplied as before by the company.

Give powers to the Metropolitan Board of Works to purchase the works respectively of companies supplying gas within the metropolis, and prescribe terms and conditions of supply, and how price is to be settled.

That should the Metropolitan Board of Works be empowered to purchase, it is desirable that the chief analyst should be appointed by the Board of Trade, and that the regulations here proposed should apply where applicable.

COMPOSITION AND QUALITY OF THE METROPOLITAN WATERS, IN DECEMBER, 1866.—The following are the returns of the Metropolitan Association of Medical Officers of Health:—

Names of Water Companies.	Tot. solid Matter per gal.	Loss by Ignition*	Oxidizable Organic Matter.†	Hardness.	
				Before Boiling.	After Boiling.
Thames Water Companies.	Grains.	Grains.	Grains.	Degrees.	Degrees.
Grand Junction	20·17	1·00	0·82	14·5	6·0
West Middlesex	21·00	0·90	0·64	15·0	8·0
Southwark and Vauxhall	21·08	1·98	1·82	14·5	6·0
Chelsea	19·96	1·25	0·82	14·0	6·0
Lambeth	19·83	1·49	1·34	13·5	5·5
Other Companies.					
Kent	27·38	1·10	0·00	17·0	8·5
New River	21·58	0·90	0·80	14·5	5·0
East London	23·49	1·50	1·16	15·0	5·0

HY. LETHEBY, M.B.

* The loss by ignition represents a variety of volatile matters, as well as organic matter, as ammoniacal salts, moisture, and the volatile constituents of nitrates and nitrites.

† The oxidizable organic matter is determined by a standard solution of permanganate of potash—the available oxygen of which is to the organic matter as 1 is to 8; and the results are controlled by the examination of the colour of the water when seen through a glass tube two feet in length and two inches in diameter.

The water derived from the Thames and supplied to the metropolis during the month of December has contained less saline matter than it did in the preceding month; but that derived from other sources than the Thames has contained a little less then the usual proportion. In every case, however, the quantity of organic matter has been above the average; and as it is entirely of a vegetable nature it has no doubt been derived from the decaying leaves of autumn. The fluctuations which take place in the quality of the water during the succeeding months of the year are sufficiently marked to indicate the influence of the seasons. This may be seen from the following table, which exhibits the average composition of the water supplied to the metropolis by the Thames companies during each of the twelve months of the last two years:—

Month.	Total Solid Matter per Gallon.	Oxidizable Organic Matter.	Month.	Total Solid Matter per Gallon.	Oxidizable Organic Matter.
	Grs.	Grs.		Grs.	Grs.
January	21·22	0·79	July	17·28	0·63
February	21·61	0·67	August	17·57	0·59
March	20·45	0·73	September.	17·51	0·61
April	19·58	0·49	October	18·80	0·62
May	18·99	0·47	November.	20·56	1·04
June	18·49	0·62	December.	20·78	1·01

So that from October to February the total amount of solid matter in the water gradually rises to its maximum, which is rather more than 21 grains per gallon; and then it as gradually declines, until, at the beginning of summer, it is no more than about 17 grains per gallon. Throughout the months of July, August, and September, it remains at nearly the same proportion, and than with the advance of autumn it slowly increases. The quantity of organic matter in the water is at its maximum in November, directly after the fall of autumn leaves; and its minimum is in the month of May. The same facts are observed with the water supplied by the New River and the East London Companies, whose sources of supply are very nearly of the same quality as the Thames; but it is not so with the deep chalk water of the Kent Company. At the close of the year it may be interesting to review the results of our investigations into the character of the water supply of the metropolis during the last twelve months, and to compare it with what it was in 1851, when the last Government commission was appointed to examine it. At that time the population of London was 2,362,236; and the quantity of water daily supplied by all the metropolitan companies was 45,885,900 gallons. This was at the rate of 19·4 gallons per head. At present the estimated population of London is 3,067,536; and the average daily supply of water is 92,734,000 gallons, which is at the rate of a little more than 30·2 gallons per head. As far, therefore, as *quantity* is concerned, the improvement is considerable, for the increase is nearly 60 per cent. on the average daily supply of 1851; in fact, while the population of London has increased during the last fifteen years to the extent of only about one-third, the water supply has been more than double. And so also with respect to the *quality* of the water, there has likewise been a marked improvement. In the year 1851, the average proportion of solid matter in the Thames supply was 21·43 grains per imperial gallon, whereas in the year which has just expired it has been only 19·64 grains. The same is the case with the water obtained from other sources than the Thames; for the amount of solid matter in the Kent water has fallen from 29·71 grains per gallon to

27·01; in the New River, from 19·50, to 18·97; and in the East London, from 23·51, to 20·81. But the most important improvement has been in the reduction of organic impurity. In 1851, the quantity of organic and other volatile matters dissipated by heat from the solid residue of the Thames supply was 2·46 grains per gallon; in 1866 it has been only 1·05 grain. In the Kent water it has declined from 2·61 grains per gallon, to 1·04; in the New River water from 2·79, to 0·89; and in the East London water from 4·12 to 1·04. These facts are best illustrated by the following table:—

Comparison of the Quantity and Quality of the Water supplied to the Metropolis in 1851 *and* 1866.

Population	1851	2,362,236
	1866	3,067,536
Average daily supply	1851	45,885,900 gallons.
	1866	92,734,100 ,,
Ditto ditto per head	1851	19·4 gallons.
	1866	30·2 ,,

Companies.	Years.	Total Solid Matter per Gallon.	Organic and other Matter lost by Ignition.	Hardness.	Average Daily Supply.
		Grs.	Grs.	Degs.	Galls.
Grand Junction	1851	21·72	3·07	14·0	3,541,700
	1866	19·74	0·98	13·1	8,551,800
West Middlesex	1851	22·67	2·75	14·6	3,334,000
	1866	19·32	0·95	13·0	8,102,300
Southwark and Vauxhall	1851	21·08	1·51	15·0	6,013,700
	1866	20·02	1·02	13·0	12,367,000
Chelsea	1851	21·28	2·38	14·4	3,940,700
	1866	19·31	0·94	13·0	7,748,000
Lambeth	1851	20·40	2·59	14·2	3,077,300
	1866	19·83	1·16	13·0	8,694,100
Kent	1851	29·71	2·61	16·0	1,079,300
	1866	27·01	1·04	18·3	5,927,200
New River	1851	19·50	2·79	14·9	15,435,600
	1866	18·97	0·89	14·1	22,729,700
East London	1851	23·51	4·12	15·0	9,036,000
	1866	20·81	1·04	14·8	18,614,000

This improvement in the quality of the water has been effected in three ways—First, by selection of better sites for the collection of the water; secondly, by careful processes of filtration through acres of fine sand, &c.; and thirdly, by the storeage of the filtered water in covered reservoirs. Whether other improvements can still be effected is a subject for careful inquiry; and it is likewise a matter for calm and deliberate investigation, whether the water supply has had anything to do with the recent epidemic of cholera. On this head, the medical officers of health of London, and especially those who have been most engaged with the disease, will be best able to give an opinion. Already, indeed, the subject has been considered by the health officers of the eastern districts of London where the epidemic was most severe, and their opinions do not accord with the popular hypothesis.

Analysis of the Metropolitan Waters for December, 1866, by Professor Frankland, F.R.S., of the Royal College of Chemistry.—The Registrar-General has to acknowledge the courtesy of the London water companies, who have all furnished him with the average daily supply of water for the month of November. 431,888 cubic mètres of water were supplied daily; or 986 litres to each house, and 141 litres (=31·0 gallons) to each person.

Names of Water Companies.	Number of Houses supplied in Nov., 1866.	Average daily Supply of Water in Gallons during Month of Nov., 1866. (See note.)	Solid Matter in 100,000 part of the Waters.	Organic and other Volatile Matter included in column 4.	Amount of Oxygen required for oxidation of Organic Matter.	Total Hardness.
Thames Water Companies.						
Chelsea	26,783	8,060,900	31·72	1·08	·0543	18·5
West Middlesex	36,331	8,052,585	29·90	1·24	·0599	19·1
Southwark and Vauxhall	73,925	13,255,400	31·18	1·10	·0629	19·4
Grand Junction	26,450	8,384,310	30·74	0·87	·0540	19·1
Lambeth	37,050	9,085,100	30·13	1·19	·0599	18·2
Other Sources.						
Kent	33,693	5,503,833	37·99	1·11	·0190	23·4
New River			17·92	0·86	·0299	14·2
Do., filtered through animal charcoal	112,829	22,815,000	16·60	0·48	·0096	13·8
East London	90,174	19,685,000	34·34	1·63	·0987	20·0
South Essex*	903	215,026	31·32	1·48	·0111	22·5

* The secretary to the South Essex Water-Works Company writing in October said—"We have not extended our mains at present west of Romford."

Note.—The water includes the supply for manufactures and for various purposes other than domestic consumption. This return, as compared with that for the previous month, shows an increase of 219 houses and a decrease of 3,422,722 gallons of water supplied daily. The table may be read thus:—100,000 lbs. of the Chelsea water contained 31·72 lbs. of solid matter, of which 1·08 lb. of organic and other volatile matters was driven off by incineration. 0·0543 lb. of oxygen was required to oxidize the organic matter in the said quantity of Chelsea water. Of the solid matter 18·5 lbs. were carbonate of lime or its equivalent of hardening salts. The fourth column of this table contains the amount of solid matter left on evaporation and desiccation at 120 deg. C.—130 deg. C. (248 deg. F.—266 deg. F.). The results are recorded in 100,000 parts. By moving the decimal point one place to the right the above figures express in milligrammes the quantities contained in 1 kilogramme of the several waters.

The New River Company's water exhibits a marked decrease in the amount of solid impurity as compared with last month; the total solid residue contained in this company's water having been 29·09 parts in 100,000 in November, whilst it is only 17·92 parts in December. The experience of the last seven months, however, proves that the quality of the water supplied by this company varies in different districts; when the sample has been taken from the parish of St. Marylebone it has invariably contained a larger amount of solid impurity than when it has been taken from the parish of Hampstead. The sample of New River water analyzed in November was collected in Tottenham Court Road, that analyzed this month from Haverstock Hill. With regard to the filtration of this water through animal charcoal, it will be observed that although the total daily domestic supply of a house on Haverstock Hill has passed through the same filter for seven months, the animal charcoal still retains practically unimpired its power of abstracting organic impurities. The whole of the waters were clear when drawn from the companies mains, with the exception of the Kent Company's water, which had a quantity of light flocculent matter suspended in it, that daily increased in amount.

The St. Olave's Board and the Surrey Consumers Gas Company.—The committee appointed on the gas supply stated at a recent meeting that they had obtained an interview on the 8th of November with the directors of the Surrey Consumers Gas Company, to ascertain the cause why a reduction in the price of gas supplied to the public lamps in the district had been refused, and a reduction of 11 per cent. having been made in the price of gas supplied to the private consumers. The directors expressed dissatisfaction as to the manner in which the lamps were lighted and extinguished by the men in the employ of this board. It was alleged on their behalf that the men so turned on the gas that they caused a consumption of from 6 to 7 feet each of gas per hour instead of 5 feet, which was the quantity stipulated for. Moreover, that they were frequently lighted in the daytime for the convenience of cleaning the lamps, and also that the fittings were not carefully attended to, and consequently there was a large amount of gas allowed to escape which might be prevented. As a remedy, they suggested that the lamps should again be placed under their charge, in which event they would be willing to undertake that responsibility on an additional charge to the public of 5*s.* per lamp per annum, the charge now being £5 5*s.*; and in order to ensure a full and uniform supply of 5 feet of gas per hour to each lamp, it was suggested that regulators should be used, which, being adjusted to the lowest pressure on the gas in the main, would always allow that quantity to be consumed. The committee had since found that, instead of consuming 6 or 7 feet per hour as alleged, the average had been on the whole year but a small fraction above 4 feet per hour, and no single night was the average consumption more than 5 feet per hour. The practice of the men turning on the gas in the daytime had not the sanction of that board, and had ceased for more than two years past, while the surveyor had reported that the lamps were much better under the control of the board than they were under that of the company. The committee found that during three years ending March last the cost of lighting and extinguishing the lamps had been £794. The number of lamps in the district being 415, the cost of each was 12*s.* 9*d.* per annum. The committee were therefore of opinion that the allegations made on behalf of the directors were not sustained, except in the improper lighting in the daytime. In conclusion they recommended that a copy of this report be sent to the directors of the gas company, and that a further application be made to them for a reduction in the price charged for the gas supplied to the public lamps in the district.—Mr. Rendle, in a long and able speech, reviewed all the negotiations and interviews the committee had had with the directors, all of which had been reported on previous occasions. The report was then adopted *una voce*.

A Gas Consumer Convicted of Defrauding a Gas Company.—Thomas Derbyshire, a beer-seller in Victoria Street, Gerard's Bridge, was summoned for unlawfully and improperly using or burning gas belonging to the St. Helen's Gas Company. He did not appear, but was represented by his wife.—Mr. Marsh appeared for the prosecutors, and Mr. Swift for the defence.—Mr. Marsh, in opening the case, stated that the defendant had been taking gas from the St. Helen's Gas Company for two or three years. He had been supplied with a meter which, when fixed in his shop, had been clean and of a green colour. About two months ago, when the gas inspector called there for the purpose of taking the quantity of gas consumed, he found the meter all covered with clay, showing that something had been done to it. He took hold of the "unions" which connected the pipes and the meter, and found that they were slack, being easily moveable with the hand. When he found "unions" in that state it was part of his duty to take his pliers and fasten them up tight. He accordingly did so in that case, and left the joints in perfect order. On the 24th of November his duty called him again to inspect the meters in that neighbourhood, and in due course he accordingly visited the beer-house of the defendant. On entering, he saw the defendant's wife, and told her that he had come to inspect the gas-meter. "All right," she replied, and immediately called out twice—"Derbyshire, come downstairs and look at the meter;" afterwards explaining to the gas inspector that they had been burning gas on the previous evening, when a leak had taken place. The defendant was nearly, if not entirely blind, but notwithstanding that he was very ingenious, and could make a small engine perfect in all its parts. Derbyshire, on being called, descended, and without taking the slightest notice of his wife or any one else, immediately went down upon his knees in front of the meter, unscrewed the two "unions," and was about to transfer them to different places, when the meter inspector caught him and told him to let them alone. The pipe at the front of the meter was the inlet, and the one at the back the outlet; but it was found the defendant had transferred the inlet-pipe to the place for the outlet, and *vice versâ*, which had had the effect of making the clock-work work backward, and represent that less gas had been consumed than really had been. The clay had also been used to prevent an escape or gas, as the pipes did not exactly fit the places when reversed. The reversion could have had no other object than that of defrauding the gas company by the improper consumption of gas.—Mr. Edward Booth, gas inspector, and Mr. Pritchard, manager of the gas company, were afterwards called, and proved the statement in evidence.—Mr. Swift submitted that, in point of law, the prosecution had failed, as it was one of the first principles in criminal practice that in the information there should be no alternative, whereas in the summons in that case it stated that the defendant had unlawfully and improperly used *or* burned gas. The information was, therefore, clearly informal. He also submitted that, as the prosecutors had confined their evidence entirely to the state of the meter, they had no evidence before them to show whether or not the gas had been used or burned.—The chairman repelled both objections, and stated that they had determined to inflict such a penalty as would deter others from similar practices.—The defendant would be fined 40*s.* and costs. —*St. Helen's Standard.*

Water Supply of Towns.—*Whitehall, Dec.* 24.—The Queen has been pleased to appoint the Most Noble Charles Henry, Duke of Richmond; Sir John Thwaites, Knt.; Colonel Henry Drury Harness, R.E., C.B., Benjamin Samuel Phillips, Esq., one of the aldermen of the City of London; Thomas Elliot Harrison, Esq., and Joseph Prestwich, Esq., to be Her Majesty's commissioners for the purpose of ascertaining what supply of unpolluted and wholesome water can be obtained by collecting and storing water in the high grounds of England and Wales, either by the aid of natural lakes or by artificial reservoirs, at a sufficient elevation for the supply of the large towns; and to report, firstly, which of such sources are best suited for the supply of the metropolis and its suburbs; and secondly, how the supply from the remaining sources may be most beneficially distributed among the principal towns.

Share List of Metropolitan Gas Companies.

No. of Shares issued.	Amount per share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
8000	10	Anglo-Romano . .	10 0 0	9 0 0	11 to 13
5000	20	Bahia (Limited) . .	20 0 0	4 0 0	16 10 0
1000	20	Do., preference .	20 0 0	10 0 0	27 10 0
750	20	Do., do., redeem.	10 0 0	10 0 0	12 10 0
30000	5	Bombay (Limited).	5 0 0	£5 intr.	4 to 4¼
10000	5	Do., third issue .	4 0 0	£5 intr.	3 to 3½
10000	20	British, Limited . (Norwich, Hull-Sculcoates, Hanley, Tunstall & Shelton [Potteries], Trowbridge, & Holywell.)	20 0 0	10 0 0	27 to 29
12000	50	*Chartered*	50 0 0	10 0 0	
6000	50	Do.	35 0 0	10 0 0	
10000	20	*City of London*, A shares	20 0 0	10 0 0	26 to 28
10000	10	Do., B shares	10 0 0	4 0 0	6 to 6½
8000	10	Do., new shares.	10 0 0	10 0 0	13 to 14
25000	25	City of Moscow (L.)	25 0 0	£7 intr.	17 to 18
17490	25	*Commercial* . . .	25 0 0	10 0 0	34 to 35
2500	20	Continental Union.	20 0 0	8 0 0	14 to 15
17500	20	Do.	15 0 0	8 0 0	9 to 10
10000	20	Do., preference .	20 0 0	7 0 0	
5827	5	County & Gen. (L)	5 0 0	nil.	
2000	5	Do., preference . (Pater, Pembroke, Ely, Lea Bridge, Northfleet, Walton, & Ware.)	5 0 0	nil.	
5000	10	*Crystal Pal. Dist.*	10 0 0	10 0 0	14 to 15
5000	10	Do., preference .	10 0 0	6 0 0	12½ to 13
10000	10	Do.	2 10 0	7 0 0	2½ to 3
4000	50	*Equitable*	50 0 0	10 0 0	70 to 72
4000	25	Do., new shares.	25 0 0	10 0 0	35 to 36
23406	10	European (Lim.) .	10 0 0	10 0 0	12 to 12½
12000	10	Do., new shares. Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	5 0 0	10 0 0	6 to 6½
		Gt. Cent. Gas Cons.	10 0 0	10 0 0	12½ to 13
5000	10	Hong Kong (Lim.)	10 0 0		8 to 10
26000	50	*Imperial*, old sh.	50 0 0	10 0 0	68 to 70
1300	100	Do., bonds . . .	£100	10 0 0	185 to 190
7000	25	Imperial Austrian.	10 0 0		
28000	50	*Impl. Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwp., Bordeaux, Brussels, Cologne, Frankfort-on-M., Haarlem, Stolberg, Toulouse, & Vienna	43 15 0	16 0 0	90 to 91
400	100	Impl. Mexican (L.)	75 0 0		
3000	40	*Independent* . . .	40 0 0	10 0 0	60 to 61
3000	10	Do.	10 0 0	5 0 0	7 to 9
3000	20	Do.	12 10 0	7 10 0	13 to 14
7133	50	*London*	50 0 0	10 0 0	60 to 61
5610	25	Do., 1st pref. .	25 0 0	6 0 0	25 to 27
503	50	Do., 2nd pref. .	50 0 0	6 0 0	
214	50	Do., 3rd pref. .	50 0 0	6 0 0	
18781		Do., 1st pref. sh		6 0 0	
11828		Do., 2nd pref. sh		5 0 0	
12000	5	Malta & Medit. (L.)	5 0 0	3 0 0	3 to 3¼
6000	5	Do., preference .	4 0 0	7 0 0	4 0 0
30000	5	Oriental, Calcutta	5 0 0	8 10 0	5¼ to 5½
30000	5	Do., new shares.	1 0 3	8 10 0	1 to 1¼
10000	5	Ottoman (Limited)	5 0 0		2 to 4
10000	10	Pará (Limited) . .	10 0 0	6 0 0	9¼ to 9½
27000	20	*Phœnix*	20 0 0	10 0 0	27¼ to 27½
3600	100	Do., new	20 0 0	7 10 0	22 to 22½
144000	Sk.	Do. (capit. profits)		5 0 0	72 to 74
5000	20	*Ratcliff*	20 0 0	10 0 0	25 to 27
	20	Rio de Janeiro (L.)	20 0 0	10 0 0	21 to 22
6959	5	Singapore (Lim.) .	5 0 0	3 10 0	
2000	5	Do., preference .	5 0 0	7 10 0	
		Shanghai			
4800	50	*Sth. Metropolitan*	50 0 0	10 0 0	70 to 72
15000	10	*Surrey Consumers*	10 0 0	10 0 0	13½ to 13½
10000	10	Do., new	5 0 0	10 0 0	6¾ to 7
9000	50	United General . . (Limerick)	50 0 0	4 12 0	27 to 29
10000	10	*Victoria Docks* . .	5 0 0	6 0 0	
3000	10	*Wandsworth & Putney*	10 0 0	7 10 0	13¼ to 14
20000	10	Western (L.) A sh.	10 0 0	10 0 0	14 to 14½
10000	10	Do., B shares.	5 0 0	10 0 0	6¾ to 7
10000	10	Do., C shares.	3 0 0	10 0 0	4½ to 5
20000	10	Do., D shares.	1 0 0	10 0 0	1½ to 2
8000	5	*West Ham*	5 0 0	7 10 0	6 10 0
6000	5	Do., new shares.	3 0 0	7 10 0	3 18 0
551	10	West London Junction (Lim.). .	10 0 0	6 0 0	
520	10	Do., preference .	10 0 0	6 0 0	

Price Current.

CASTINGS.—*Per Ton.*

Average Weight of Cast-iron Gas-pipes, per Yard.

1¼ in.	2 in.	2½ in.	3 in	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lb

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle	Wales.	Yorkshire, Derbyshire, and Staffordshire.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Pig Iron, No. 1, G.M.B.	3 15 0	2 14 9	2 12 6	3 10 0	3 15 0
1¼ and 2-inch Socket-pipes	7 10 0	6 0 0	6 15 0	6 15 0	7 10 0
2½ and 3-inch ditto	7 0 0	6 0 0	6 5 0	6 10 0	7 0 0
4 and 6-inch ditto	6 10 0	5 10 0	5 15 0	6 0 0	6 10 0
6 inches and upwards ditto	6 5 0	5 0 0	5 10 0	5 15 0	6 5 0
Retorts, 1st fusion, hot blast	6 0 0	—	5 5 0	5 10 0	6 0 0
Ditto, 2nd ditto, cold ditto	7 0 0	5 15 0	5 15 0	6 0 0	7 0 0
Tank-plates, ¼ thick and above	6 10 0	5 10 0	5 10 0	5 15 0	6 5 0

WROUGHT-IRON TUBING,

Subject to 50 per cent. Discount.

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 12 feet—per foot	1 8	1 0	0 10	0 7	0 5	0 4¼
Ditto ditto, from 6 inches to 18 inches—each	3 0	2 0	1 9	1 3	1 0	0 9
Connecting-pieces, or Long Screws	3 6	2 3	2 0	1 6	1 2	0 11
Bends, Springs, and Elbows (wrought iron)	3 9	2 3	1 9	1 0	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 10
Crosses, ditto	4 6	3 0	2 6	2 0	1 6	1 2
Iron Cocks	17 6	9 6	7 6	4 6	3 3	2 6
Ditto, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Nipples	1 3	0 9	0 8	0 6	0 5	0 4
Plain Sockets	1 0	0 8	0 7	0 5	0 4	0 3
Syphons, 2-quart	15 0	14 0	13 6	13 0	12 0	—

GAS COALS.—*Per Ton.*

Newcastle.—Unscreened:—

East Castle, Haswells, Nettlesworth Primrose, and South Pelaw	7s. 0d.
Felling, North Pelton, Redheugh Main, Walker's Primrose, West Wear, and Whitwell Primrose	7 3
Burnhope, Craghead, Charlaw, Derwent, Edmondsley, Eighton Moor, Hartlepool Pelaw, Holmside, Lambton's Gas, Lanchester Pelaw, Medomsley, Mickley, New Pelaw, Pelaw Main, Ravensworth, South Moor Pelton, South Leverson, Townley Main, Tyne Main, West Pelaw, Wearmouth Hutton, and Witton	7 6
Pearth, Ravensworth Pelaw, Waldridge, West Garesfield, and West Pelton	7 9
Brancepeth, Dean's Primrose, New Pelton, Pelton, South Pearth, Stella, Urpeth, Washington Hutton, and West Leverson	8 0
Ramsay's Newcastle Cannel	20 0
Wigan Cannel (at Liverpool)	17 0
Scotch Cannel:—	
Boghead (at Leith)	70 0
Kirkness, best (at Burntisland)	28 6
Capeldrae, 1st quality (at ditto)	28 6
Cowdenbeath	11 0
Ditto, 2nd ditto (at ditto)	18 6
Lesmahago (at Glasgow)	29 0
Ditto (at Granton)	30 0
Arniston	27 6
Wemyss	20 0
Haywood, Wilsontown (at Granton)	22 0
Pirnie	14 0
Lothian's Cannel (at Leith)	28 0
Myles' Cannel	28 6

FREIGHTS.

Coastwise—Newcastle.—Per Ton:—

Chatham and Rochester	6s. 0d
Cork	9s. to 10 0
Dover, Folkestne, & Ramsgte	6 9
Dublin	10s. to 10 6
Exeter Quay	11 0
Ipswich	5 9
London (from Leith)	8 6
London (Pool)	6 6
Lowestoft and Yarmouth	5 0
Portsmouth & Southampton	8s. to 8 6
Plymouth	10 6
Shoreham	7 6
Whitstable	6 0
Weymouth	9 0
Foreign.—Per Keel:—	
Barcelona	£22 0
Bordeaux	13 10
Boulogne and Calais	—
Cadiz	15 0
Cronstadt	—
Copenhagen	9 0
Genoa	20 0
Hamburg	—
Havre de Grace	9 15
Leghorn	18 0
Lisbon	13 0
Rotterdam	—
Stettin	7 10
Trieste	20 0
Venice	22 0

SUNDRIES.

Best Nettle Fire-bks., p. 1000, £2 10s. to £2	15 0
Cliff's Fire-bks. (at Wortley), p. 1000.	2 15 0
Ingham's ditto (at Wortley), p. 1000.	2 15 0
Fire-clay Retorts, p. ft. run, 5s. 6d. to	0 7 0
Tough Cake Copper, p. ton	89 0 0
English Pig Lead, p. ton	20 0 0
Welsh Bar Iron (in London), p. ton	6 10 0
Foreign Spelter, p. ton	22 5 0
English Block Tin, p. ton	87 0 0
Banca, p. ton	85 10 0
Tarred Rope Yarn, p. cwt.	1 0 0

Advertisements.

ECONOMY IN GAS PURIFICATION.

Mc DOUGALL'S

HYDRATED PEROXIDE OF IRON.

This Oxide is now well known, and has commended itself for efficiency and durability. It is free from any mixture of sawdust or similar material, and every particle is available for use. It readily takes up sulphur, revivifies rapidly, and lasts longer than any other Oxide in the market. Prices on application to—

ALEX. Mc DOUGALL, Manufacturing Chemist,

LONDON—11, Arthur Street West, London Bridge, E.C.; MANCHESTER—Riga Street, Shudehill.

LIVESEY FIRE-CLAY WORKS,

NEAR BLACKBURN, LANCASHIRE.

ORLANDO BROTHERS,

MANUFACTURER OF PATENT CLAY RETORTS,

AND EVERY DESCRIPTION OF

TUBULAR GLAZED SEWERAGE PIPES, BENDS, JUNCTIONS, ETC.

FIRE-BRICKS, TILES, BLOCKS, AND CHIMNEY-TOPS.

WANTED, by a Metropolitan Gas Company, an experienced INSPECTOR, who understands practically main and service laying, meter fixing, &c.

Apply, by letter only, in own handwriting, stating age, where last employed, &c., and enclosing testimonials to "GAS," care of Mr. Algar, 11, CLEMENT'S LANE, E.C.

WANTED, by a Gas Company within 15 miles of London, a MANAGER, to take charge of Gas-Works capable of producing 150,000 cubic feet per day. No person need apply who has not filled a similar situation, and who can keep the books of the Company, collect moneys, and give security for the sum of £500.

Application, stating salary required (the Company finding house, firing, and light), with copies of testimonials, to be addressed to X. Y., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by the Advertiser, the MANAGEMENT of a Gas-Work. He thoroughly understands the manufacture and distribution of gas, fittings, &c.

Address, stating terms, to A. B., Post-Office, Sudbury, SUFFOLK.

WANTED, by a young Man, a Situation as GAS-FITTER or WORKING MANAGER. Has been several years in a London Work.

Address A. B., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, a Situation as Manager of a country Gas-Work. Is quite capable of taking the entire management. Also a thorough knowledge of laying mains and services, and fitting houses, &c. Good references.

Address B. A., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TO GAS ENGINEERS, &c.

AN Engineer of experience in constructing, erecting, and managing of Gas-Works, is open for an ENGAGEMENT. Satisfactory testimonials.

Address M. G., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by a young Man, a Situation as INDEX TAKER, FITTER, or PROVER at a Gas-Work; or Prover at a Gas-Meter Maker's. Town or country.

Address J. E., 29, East Street, Kennington Road, LONDON.

OLD IRON.—A quantity of the above FOR SALE at the Gas-Works, Bromley KENT.

Dec, 24, 1866.

FOR SALE.—Nine New Cast-Iron D RETORTS, each 8 ft. long; a large number of RETORT-HOUSE CONNEXIONS, 3, 4, and 5 in.; and a large number of Wrought-Iron LAMP-BRACKETS and STAYS.

Particulars can be had on application to the Cork Gas Consumers Company, Limited, 72, South Mall, CORK.

Jan. 4, 1867.

FOR SALE, at the Folkestone Gas- Works, the undermentioned APPARATUS, which is thrown out of use by the erection of new works:—

59 15-in. Round Mouthpieces and Lugs.
70 Wrought-Iron Lids, and 54 Cross-Bars and Screws.
59 5-in. and 4-in. Ascension-Pipes, and about 65 H-Pipes.
36 ft. of 15-in. ▭ Hydraulic Main (wrought iron), and 41 ft. of 14-in. Round Hydraulic Main (cast iron), with dips.
30-ft. run of 10-in. Hydraulic Main in six lengths.
About 30 Buckstaves, wrought and cast iron, with tie rods.
1 5-in. Condenser, 9 Pipes, Long Box, and By-Pass complete, fitted with 3 of Bryan Donkin's valves.
1 4-in Condenser complete.
1 Scrubber (cast iron), 9 ft. high and 6 ft. 6 in. diameter, with 5-in. connexions, by-pass, and 3 valves.
2 Purifiers, each 12 ft. long, 7 ft. wide, and 3 ft. 6 in. deep, fitted with lids, crane, and iron sieves complete; and 5-in. Connexions, with 7 5-in. valves.
1 Gasholder, 35 ft. in diameter, 12 ft. deep, with 6 cast-iron guide-columns, girders, and carriages complete.
1 4-in. Governor complete ("Wright," maker).
1 3-in. do. do. ("Crosly," maker).
1 3-in. do. do. ("Vicary," maker).
1 Walker 5-in. Station-Valve complete.
2 3-in. Regulating Valves.
8 5-in. Rack and Pinion Valves.

Persons desirous of treating for the whole or any portion of the above are requested to apply to Mr. W. MEDHURST, Jun., Secretary to the Gas Company. FOLKESTONE.

TO TAR DISTILLERS AND OTHERS.

THE Wallasey Local Board are prepared to receive TENDERS for the purchase of the surplus GAS TAR produced from time to time at their Gas-Works, Great Float, near Birkenhead, during a period of one, two, or three years from the 1st of March next.

Any further information may be obtained on application to Mr. E. H. Harris, Gas and Water Manager to the Board.

Sealed tenders, endorsed "Tender for Purchase of Gas Tar," and addressed to "The Chairman of the Gas and Water Committee," are to be left at the Public Offices, Egremont, Cheshire (Law Clerk's Office), before Twelve o'clock at noon of Monday, the 28th instant.

By order, H. A. EWER, Law Clerk.

Egremont, Jan. 2, 1867.

TO BUILDERS AND CONTRACTORS.

THE Directors of the Colchester Gas Company are prepared to receive TENDERS for excavating and building a BRICK TANK, 122 ft. in diameter, and 22 ft. in depth.

Specifications may be seen, and further information obtained, on application at the Company's Office in Queen Street, Colchester.

By order of the Board,
A. C. FRASER,
Secretary & Engineer to the Company.

TO GAS MANAGERS, ETC.

FOR SALE, a "Jones's Patent Ex- HAUSTER," 2 ft. 2 in., over flanges, in breadth, by 2 ft. 11 in. in depth, with 7-in. inlet and outlet pipes, and self-acting hydraulic by-pass. Dip of seal 12 in.; fitted complete. Has only been a short time in use.

For further particulars apply to JOHN E. POYNTER, 72, Great Clyde Street, GLASGOW.

TO BE SOLD, a Wrought-Iron An- NULAR CONDENSER, a WROUGHT-IRON SCRUBBER, with three shelves, both 10 feet high; TWO PURIFIERS, 8 ft. by 4, by 3 ft. deep; STATION-METER, to pass 2000 per hour, complete, with 5-inch valves, by-passes, and connexions.

Also a SIX-INCH GOVERNOR, with by-pass, and a CAST IRON CIRCULAR TAR TANK, 7 ft. by 4 ft. 6 in.

The whole erected last year, and have been in use about nine months. Also several hundred yards of 6, 5, and 4-inch MAIN PIPES.

Apply at the Aldershot Gas and Water Company's Office, Bank Street, ALDERSHOT.

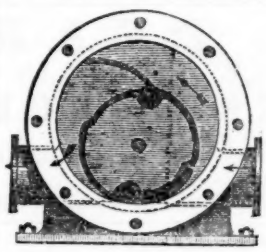
NATURAL
HYDRATED OXIDE of IRON
constantly on Sale. Apply to
MARTYN DENNIS AND CO.,
LIVERPOOL.

To Gas Companies, Gas Engineers, Gas Fitters, &c.

THE
NEWEST DESIGNS
FOR
LAMP-POSTS, DWARF GAS PILLARS, BRACKETS, LAMPS, LANTERNS, &c.,

Will, upon receipt of particulars, be forwarded free, on application to

TURNER & ALLEN,
IRONFOUNDERS, ENGINEERS, &c.,
201, UPPER THAMES STREET.



HORSLEY'S
PATENT
GAS EXHAUSTER.
(From 250 Feet to 200,000 Feet per Hour.)

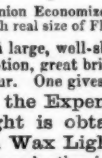
The only Exhauster not requiring a relieving-valve in the by-pass. For particulars and prices apply to the PATENTEE,

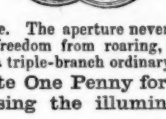
22, Wharf Road, City Road, London, N.

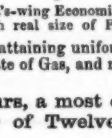
WALTER FORD,
159, GRAY'S INN ROAD, LONDON.
MANUFACTURER OF WET AND DRY GAS-METERS, STATION-METERS, GOVERNORS, &c. &c.

Sole Manufacturer of **PADDON'S PATENT STREET-LAMP REGULATORS,** for insuring any required consumption. These Regulators are in general and increasing use, and references can be given to Gas Companies who use them for every Lamp.

PATENT ECONOMIZERS,
ADAMAS-POINTED,


Union Economizer,
1-10th real size of Flame.




Bat's-wing Economizer,
1-10th real size of Flame.

Ensure a large, well-shaped, steady flame. The aperture never wears out, thus attaining uniformity of consumption, great brilliancy of light, freedom from roaring, flickering, or waste of Gas, and no smell of sulphur. One gives more light than a triple-branch ordinary burner.

At the Expense of not quite One Penny for full five hours, a most cheerful light is obtained, surpassing the illuminating power of Twelve best Sperm Wax Lights.

The combustion is perfect; there is no escape of carbonic acid, carbon (or Soot), to discolour the ceiling, or injure the furniture.

All sizes kept in stock, suitable for cannel, mixed, and common gas, plug or taper screwed, to take the place of any old burner.

TESTIMONIAL.

Gas-Works, Portsea, January 2, 1867.

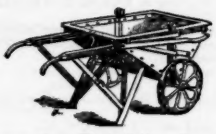
Dear Sirs,—I cordially respond to your invitation to give my opinion of your "ECONOMIZER." We have now not less than 8000 in use, all of No. 8 size, bat's-wing and fish-tails; and in no single instance have they failed to give a brilliant light, well-formed, and unaltered from day to day, with a minimum consumption of gas. Every gas engineer who has had to struggle with the complaints of his customers, knowing them to arise solely from imperfect combustion of the gas for light-giving purposes, should introduce these burners, and he will find what I have found, universal satisfaction, in place of a great deal of discontent. On the other hand, the consumer will find it to his advantage to CONSUME his gas through this burner, as he will really get the value of what he is paying for. I can affirm with perfect confidence that this Company's consumers who now use this burner would not part with it if it cost six times as much.—I am, dear sirs, yours very truly.

J. DOUGLAS, Superintendent and Secretary,
Portsea Island Gaslight Company.

Messrs. Lambert Brothers, Walsall.

LAMBERT BROTHERS, Tube Mills, Gas-Fitting Manufactory,
WALSALL.
Agents supplied with Show-Cards and Tables of Consumption.

TO GAS & WATER COMPANIES, FIRE-BRICK & RETORT WORKS, ENGINEERS, &c.



A great saving of time, labour, and expense is effected by the use of

PRICE'S

PATENT COAL AND COKE BARROWS.

The following opinion from one of our most eminent Gas Engineers will certify the value attached by him to this invention:—

I am of opinion that this invention is a most important one, and only wants to be made known to become universally adopted. By its use the labour required in removing coke from the retort-house is reduced to the least degree possible. (Signed) R. P. SPICE,

April 30, 1866. Gas Engineer, County Chambers, Cornhill.

The following testimonials have been sent to the patentee, confirmatory of the above:—

Reading Gas Company, Nov. 27, 1866.

DEAR SIR,—I have pleasure in bearing testimony to the usefulness of your Barrows for removing coke from the retort-house, and consider them superior to those generally used for that purpose. Our men are very pleased with them, as the labour is much lessened by their use.

Yours faithfully,

EDWARD BAKER, Manager.

Mr. E. Price, Manager, Hampton Court United Gas Company.

Gas-Works, Richmond, Nov. 14, 1866.

DEAR SIR,—I have pleasure in stating that our stokers are much pleased with your Barrows. They certainly reduce their labour to a great extent. Yours truly,

JAMES ELDRIDGE, Manager.

Mr. E. Price, Manager, Hampton Court United Gas Company.

Communications to be addressed to the Sole Agent, R. E. KEEN, 50, Claremont Road, Surbiton, S.W.

WANTED, a Man who has a thorough knowledge as to the manufacture of gas, to take the practical MANAGEMENT and charge of Gas-Works, capable of producing about 100,000 cubic feet of gas daily.

Application, stating salary required, &c., to be addressed to Q., MR. KING, 11, Bolt Court, FLEET STREET, E.C.

ACCOUNTANT and Cashier Wanted, in the gas-fitting business. Security required (Guarantee Society preferred). Hours of business, 9 a.m. till 8 p.m. First-rate reference indispensable.

Apply, by letter only, stating full particulars as to the situation lately held, salary required, reference, and every information to save trouble, to Z. A., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

BALANCE-SHEETS AND REVENUE ACCOUNTS.

A FIRM of Accountants, much engaged in the preparation of Gas Companies Accounts, are open to contract for the keeping, balancing, or auditing the books of other Companies, which, from their experience, they are enabled to do on moderate terms.

Address, SANDELL & MADDERS, Accountants, 4, Skinner's Place, Size Lane, LONDON, E.C.

FREDERICK RICHARDS,

CONSULTING AND GENERAL ENGINEER.

WILMSLOW, CHESHIRE.

Plans, Specifications, and Estimates made for New or the Alteration of existing Gas-Works.

Gas-Works leased, or Estimates given for the Manufacture of Gas per Contract for a term of years.

Manchester Office: 8, Cateaton Street.

GAS COAL.

MESSRS. RICHARD EVANS & CO., Haydock Collieries, near St. Helen's, are prepared to SUPPLY their best GAS COAL to Gas Companies on favourable terms.

This Coal is extensively used by some of the largest Gas Companies in the Kingdom.

It produces 9,400 cubic feet of 17-candle power, and yields 13 cwt. of coke per ton.

E. J. & J. PEARSON,

DELPH & TINTAM ABBEY FIRE-CLAY & BRICK-WORKS,

STOURBRIDGE,

PROPRIETORS OF

BEST GLASS-HOUSE POT & CRUCIBLE CLAY;

MANUFACTURERS OF

GLASS-HOUSE POTS, CRUCIBLES, GAS-RETORTS, & FIRE-BRICKS OF EVERY DESCRIPTION.

EDWARD COCKEY & SONS,

IRON-WORKS, FROME SELWOOD,

PATENT GAS-VALVES.

A PRIZE MEDAL

WAS AWARDED TO THE PATENTEES AT THE INTERNATIONAL EXHIBITION OF 1862.

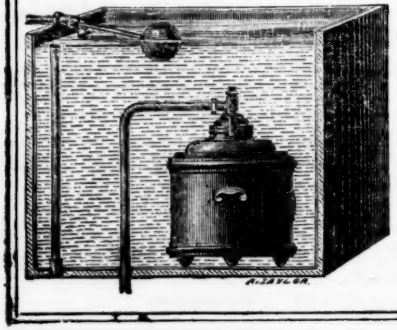
These Valves are formed of two cylinders, working one on the other horizontally, having their faces ground perfectly gas tight.

They are adapted either as central valves, for two, three, or four purifiers—as bye-passes—or as inlet and outlet-valves for gasholders.

They have been fixed in some of the most important Gas-Works in the Kingdom, for more than eight years. Considerably over two hundred of them are now in use, and the most satisfactory reports of their advantages continue to be received. They are simple in construction, and not liable to get out of repair, and if in course of time the faces should leak, they can be easily re-ground and made as tight as ever, without removal from their positions. Each Valve is fitted with an index, which shows to the person in charge of the Works in what direction the gas is passing.

Frome, January 20, 1866.

HOUSE CISTERN FITTED WITH A CISTERN FILTER.



THE LONDON & GENERAL

WATER PURIFYING COMPANY, LIMITED.

PATENT CISTERN FILTER, CHARGED SOLELY WITH ANIMAL CHARCOAL.

THE LATEST PATENTED FILTER IN GENERAL USE,

And requiring, when once fixed, no attention whatever.

Patronized and used by Her Majesty the Queen at Osborne, by H.R.H. the Duke of Cambridge the *élite* of the Medical Profession, and at the Fusilier Guards, Middlesex, St. George's, German and London Hospitals, and at the Regent's Park and Tower Barracks, and numerous Institutions Breweries, &c.

PRICES:

Filter No. 1, yielding ½ gall. p. minute. £1 10 0 | Filter No. 3, yielding 2 gall. p. minute. £3 0 0

Filter No. 2, yielding 1 gall. p. minute. 2 0 0 | Filter No. 4, yielding 4 gall. p. minute. 4 10 0

The Filters may be seen in operation, and full particulars obtained, on application to the SECRETARY, at the Offices,

157, STRAND, LONDON, W.C. (Four Doors from Somerset House).

FIRE-CLAY GAS-RETORTS, &c., CANNEL AND STEAM COALS.

WILLIAM FRASER, Inverkeithing (owner of the Works at which Fire-clay Retorts were first made), having greatly enlarged his works, can supply retorts and other fire-clay goods to any extent.

References can be given to managers of above a hundred Gas-Works whom he supplies.

WILLIAM FRASER ships COWDENBEATH PARROT COALS at Charlestown and Burntisland at 11s. per ton; and HALBEATH STEAM COALS, on Navy List, at 8s. 6d. per ton.

JAMES OAKES and CO.,

ALFRETON IRON WORKS, DERBYSHIRE, AND WENLOCK IRON WHARF, 20, WHARF ROAD, CITY ROAD, LONDON,

Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water-Works, including Iron Retorts, Socket and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.

N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.

CHARLES HORSLEY, Agent.

FRASER'S PATENT RETORTS.

THE RIBBED IRON RETORTS have now been in use about three years, and continue to give satisfaction.

The PATENT CLAY RETORTS will work off the gas from the coal in less time, and carbon does not form in them so freely, nor adhere so firmly, as to Plain Retorts.

Further particulars and prices on application to Mr. A. C. FRASER, Engineer to the Gas Company, COLCHESTER.

OXIDE OF IRON,

We are prepared to supply, on moderate terms,

HYDRATED PEROXIDE OF IRON (BOG OCHRE),

Same quality as supplied by us to several of the most extensive Gas Companies, and which has given entire satisfaction.

FRANCIS RITCHIE & SONS,
BELFAST.

INTERNATIONAL EXHIBITION,
1862. CLASS X.
PRIZE MEDAL
For excellence of Fire-Clay Gas Retorts, and "HONOURABLE MENTION" for good quality of Fire-Bricks.

WILLIAM STEPHENSON & SONS,
THROCKLEY,
NEWCASTLE-ON-TYNE.

THOMAS CARR & SON,
MANUFACTURERS OF
FIRE-BRICKS, LUMPS, TILES, RETORTS, &c. &c.
SCOTSWOOD FIRE-BRICK WORKS, NEAR BLAYDON-ON-TYNE.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of Clay Retorts, Fire-Bricks, and every description of Fire-Clay Goods.

HARRIS and PEARSON,
PROPRIETORS OF
BEST CLASS-HOUSE POT AND CRUCIBLE CLAY
MANUFACTURERS OF
FIRE BRICKS, GAS RETORTS, &C.
AMBLECOTE FIRE CLAY AND BRICK WORKS, STOURBRIDGE.
Late in the occupation of I. and W. King. Originally J. Pidcock, Esq.

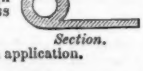
NB A quantity of best Clay Retorts in stock, viz.—Circulars, 14 inches, 15 inches, 16 inches. D's, 16×12, 15×14, 20×16, 16×18.

HANCOCK'S INDIA-RUBBER GAS-TUBING.

All sizes, from ¼ in. to 4 in. diameter and upwards.

Also,

HORSE SINGEING APPARATUS, best make, with GAS-BURNERS, COMBS, and INDIA-RUBBER TUBING, all complete.
INDIA-RUBBER BAGS for GAS-MAINS.
WASHERS for GAS and STEAM JOINTS.
VALVES (pure solid Rubber) for STEAM-ENGINES.
PACKING (Elastic) for STEAM-ENGINES.
FLANGE TUBING, for excluding Draughts and Dust through WINDOWS, DOORS, and GLASS CASES.



Section.

Illustrated Price Lists on application.

JAMES LYNE HANCOCK,
Vulcanized India-Rubber Works,
GOSWELL MEWS, AND 266, GOSWELL ROAD LONDON, E.C.

Trade Mark. **THE MEDAL FOR 1862.**

THE ONLY PRIZE MEDAL AWARDED FOR TUBES AND FITTINGS.

CROWN TUBE-WORKS,
WEDNESBURY, STAFFORDSHIRE.
WAREHOUSE—81, UPPER GROUND ST., LONDON.

JAMES RUSSELL & SONS,
Patentees and First Makers of Wrought-Iron Tubes.

ALFRED PENNY, Gas and CONSULTING ENGINEER,
WENLOCK IRON WORKS,
21, WHARF ROAD, CITY ROAD, LONDON.

Mr. PENNY having had a large experience in the construction, alteration, and management of Gas-Works, begs to inform the Directors of Gas Companies that he may be consulted on all matters appertaining thereto. He also manufactures Gasholders, Purifiers, and all the various apparatus used in Gas-Works, and keeps in stock Retorts and Mouthpieces, Socket-Pipes, Bends, Branches, T-pieces, &c. &c.

Plans, Specifications, and Estimates prepared.

W. J. HOLLANDS,
IRON MERCHANT,
31, BANKSIDE, LONDON, S.E.

SOCKET, FLANGE, HOT-WATER PIPES, AND ALL CONNEXIONS; RETORTS, HYDRAULIC MAIN, LAMP-COLUMNS, &c.; AND EVERY DESCRIPTION OF CASTINGS AND WROUGHT-IRON-WORK FOR GAS AND WATER-WORKS, STEAM, AND GENERAL PURPOSES.

N.B.—All goods kept in stock, and supplied at wholesale prices. Estimates given, and orders by post punctually attended to the same day.

BIRTLEY IRON WORKS,
CHESTER-LE-STREET,
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Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.

Warehouse in London for Cast-Iron Pipes and Connexions of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.

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BELGIAN CLAY RETORTS.

J. SUGG and CO., late ALBERT KELLER, Ghent.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Messrs. Sugg, of Ghent, beg to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by them. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.

Communications, addressed to J. SUGG and CO., GHENT, will receive immediate attention.

JAMES M'KELVIE,
CANNEL COAL MERCHANT,
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Established 1840.

ROBERT MACLAREN and CO., EGLINTON FOUNDRY, GLASGOW, Manufacturers of all sizes of Cast-Iron Main Pipes, by an improved Patent. General Ironfounders, Gas Engineers, and Wrought-Iron Tube Makers.

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100, CHARLOTTE STREET, BIRMINGHAM,
Manufacturers of
CHANDELIERS, PENDANTS, BRACKETS,
Brass and Iron Gas-Fittings, Steam and Water-Cock &c., &c.

Also,

PATENT WELDED IRON TUBES,
For Gas, Steam, Water, and other purposes.
GAS APPARATUS OF EVERY DESCRIPTION.
High-pressure Water-Valves and Cocks, &c., &c.
Plumbers Brassfoundry,
BRASS, COPPER, COMPOSITION, AND LEAD TUBES.
Works: Birmingham, and Great Bridge, Staffordshire.

STOURBRIDGE FIRE-CLAY WORKS.

E. BAKER & CO.,
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FIRE-BRICKS, LUMPS, SQUARES, and TILES of all dimensions.
GAS-RETORTS always in stock.
GARDEN EDGINGS of various patterns.
ORNAMENTAL BUILDING BRICKS.
GRATE BACKS in various designs.
Contracts entered into to set Retorts, erect Furnaces, &c.
Shipments on the shortest notice.

D. GRANT & CO.,
GAS-METER MANUFACTURERS
(Stamped according to the Sale of Gas Act).
STATION-METERS ANY SIZE.
PHOTOMETERS, EXPERIMENTAL METERS,
PRESSURE-GAUGES, &c.
Price List on application.
GAS-METER WORKS, CROSSCAUSWAY, EDINBURGH.

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FIRE-BRICK AND TILE MERCHANTS,
Wholesale and for Exportation,
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SOUTHWARK, LONDON, S.E.,
DEPÔT for STOURBRIDGE AND NEWCASTLE FIRE-BRICKS, LUMPS, TILES, and FIRE-CLAY, and every Article suitable for
GAS AND WATER WORKS.

B. CARPENTER'S Improved Wood SIEVES for Gas-Purifiers.
Works: 14, John Street, Pentonville Road, LONDON, N.

The above sieves are used by the principal gas companies in London and the country. Their utility, durability, and cheapness combined, render them superior to all others.

Testimonials from gas engineers who have tested their qualities forwarded on application.

All orders punctually attended to, and estimates given if required.

MR. G. W. STEVENSON, C.E., F.G.S., (for the last 10 years Engineer to the Corporation of Halifax), may be consulted upon all matters connected with the construction of gas-works, and the manufacture and supply of gas; also upon the construction of water-works and the supply of water to towns; and also in respect to the sewerage of towns, and sanitary works generally.

Offices, Waterhouse Street, HALIFAX, and 14, Park Street, WESTMINSTER.

CATHELS'S Patent Four-Way Disc GAS-VALVES, applied to Purifiers, Gasholders, or other apparatus, save from ONE-HALF to TWO-THIRDS the number of ordinary Valves and Connexions. They are simple, strong, and durable; and having no ground faces or rubbing surfaces, cannot get set fast however long they may remain unmoved. The direction in which the Gas is passing can also be seen at a glance.

Descriptive Circular, Prices, &c., furnished on application to the Manufacturers, Messrs. GUEST and CHRIMES, ROTHERHAM.

J. T. B. PORTER & CO.,
GAS ENGINEERS,
MANUFACTURERS AND CONTRACTORS FOR GAS-WORKS
Of any extent at Home and Abroad,
GOWTS BRIDGE WORKS, LINCOLN,
AND
JOHN STREET, ADELPHI, LONDON, W.C.

SAMUEL CUTLER, Gasholder MAKER and CONTRACTOR
For Tanks, Roofs, Purifiers, Condensers, Erection and Alteration of Works and every description of GAS APPARATUS.
PROVIDENCE IRON WORKS,
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Main Laying and Gas-Works erected complete.

WALTER MABON & CO.,
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DESIGNS, SPECIFICATIONS, & ESTIMATES FURNISHED.

GAS AND WATER PIPES.

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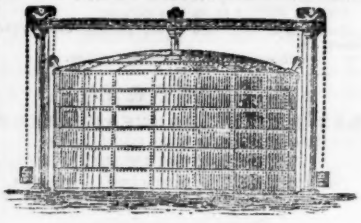

IMPROVED GAS APPARATUS,

FOR TOWNS, VILLAGES, &c.

INVENTED AND MANUFACTURED BY

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WHITESTONE IRON-WORKS, HUDDERSFIELD.

WILL BE SENT ON APPLICATION:—

PLANS, SPECIFICATIONS, and PRICES of GAS APPARATUS;

PLANS, SPECIFICATIONS, and ESTIMATES of the requisite BUILDINGS for each size of Apparatus;

PLANS of the IMPROVED ANNULAR CONDENSERS;

PLANS of the COMBINED PURIFYING APPARATUS, so eminently adapted for Exportation.

LONDON OFFICES—56, GRACECHURCH STREET, CITY.

*** *Please address letters to the Works at Huddersfield.*

NOTICE OF REMOVAL.

THE BUSINESS OF

WILLIAM SUGG,

GAS ENGINEER,

is removed to his New Factory,

VINCENT WORKS, VINCENT STREET,

REGENT STREET, WESTMINSTER.

WILLIAM INGHAM AND SONS,

WORTLEY FIRE-BRICK AND RETORT WORKS,

Near

Leeds.

W. INGHAM and SONS, having for many years been extensively engaged in the Manufacture of

RETORTS AND FIRE-BRICKS FROM THE CELEBRATED WORTLEY FIRE-CLAY

beg to call especial attention to their RETORTS, which have for many seasons proved to be unsurpassed in quality by any in the Kingdom, their FREEDOM FROM CRACKS and the ADHESION OF CARBON rendering them worthy the attention of all parties interested in the making of Gas.

The Works are of such magnitude as to ensure the prompt execution of orders to any extent.

Estimates for Setting, or Bricklayers sent when required.

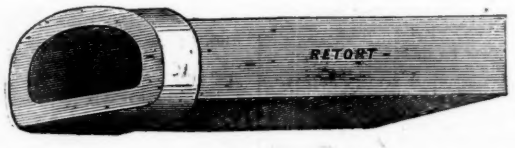
GAS OVENS IN SEGMENTS OF EQUAL QUALITY.

A large stock of Fire-Bricks, Fire-Clay, Terra Cotta, and Drain-Pipes of all sizes kept in London at CHRISTIE & CO.—Wharf, 64, Bankside, Southwark, where all particulars of Prices, &c., may be obtained.

N.B.—*Export orders continue to have prompt attention.*

KING BROTHERS,

STOURBRIDGE FIRE-BRICK AND RETORT WORKS.



KING BROTHERS beg especially to call the attention of Gas Companies to the superiority of their Retorts, which are made from the celebrated STOURBRIDGE FIRE-CLAY. Mr. King has patented a Kiln for burning Retorts, by which Patent all Cold Air is excluded from the Kiln while burning, thus rendering them FREE FROM CRACKS AND CORRECT IN FORM. By great care in Manufacturing, combined with the advantages in burning, a VERY SMOOTH SURFACE is obtained, rendering them less liable to carbonize.

Retort Ovens, Fire-Bricks, Guards, Saddles, Rabbitted Bars, Flues, and Quarries, are all Manufactured of the same quality of Clay.

Every Retort and Brick is branded "King Brothers, Stourbridge."

TO GAS COMPANIES AND THE TRADE.

NOTICE OF REMOVAL IN CONSEQUENCE OF THE LATE FIRE.

J. DEFRIES AND SONS,

Gas Engineers, and Manufacturers of

CRYSTAL, BRONZED, & ORMOLU Chandeliers;

IMPROVED CRYSTAL STAR & SUN LIGHTS;

VESTIBULES, and every description of Gas-Fittings.

Temporary Show-Rooms:—16 & 17, COMMERCIAL STREET, WHITECHAPEL,

Five Minutes Walk from their late Establishment, 147, HOUNDSDITCH.

J. D. & SONS beg most respectfully to inform Gas Companies and the Trade that their CITY SHOW-ROOMS are now complete with every description of Lighting Mediums, including Registered Designs of Mediæval Gas-Fittings, Crystal, Bronzed, Ormolu, and Electro-Plated Chandeliers, Brackets, Vestibule-Lights, Bronzed and Gilt Statuettes.

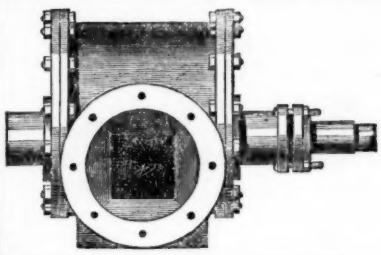
Special Designs prepared in perfect accordance with architectural arrangements. Estimates furnished for the Lighting and Fitting up of Theatres, Music-Halls, and Public or Private Buildings with Gas.

GAS-MOONS of the Newest Designs.

The PATENT GAS-REGULATOR and PURIFIER reduced to **6s. 6d. per dozen.** *Pattern-Books of Gas-Fittings, Crystal and Ormolu Chandeliers for* 1865-66 *are now complete.*

Works: LONDON and BIRMINGHAM.

The CRYSTAL CEILING, with Ventilating Apparatus, manufactured by J. Defries and Sons for the Strand Music-Hall.



ROTATORY AND DOUBLE-ACTING GAS-EXHAUSTERS,

with many recent improvements, from 1500 to 150,000 cubic feet per Hour.

JAMES BURTON, SONS, & WALLER,

MAKERS OF ENGINES, MACHINERY, and IRONWORK for GAS-WORKS,
efficient and durable TAR, LIQUOR, and SYPHON PUMPS,
GAS-VALVES, with or without Wedges, worked with powerful Worm and Rack,
SELF-ACTING BY-PASS VALVES, with Lid and Relieving Lever,
ROTATORY, TUMBLER, and CAPILLARY WATER DISTRIBUTORS for SCRUBBERS.
SMALL-SIZE EXHAUSTERS KEPT IN STOCK.

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GAS AND CONSULTING ENGINEER.

OFFICES REMOVED TO

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PATENTEE & MANUFACTURER of the following Inventions:—

RETORT SETTINGS, heated by tar without the production of smoke.
STEAM-ENGINES and EXHAUSTERS, separately or combined.
FOUR-WAY VALVES, one of which is equal to three ordinary Valves.
STATION GOVERNORS in which the Gasholder cannot tilt and cause accidents.

A Pamphlet containing Eighteen Illustrations of the foregoing, with letter-press on the construction of Works, post free, 2s. 6d.

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NEAR LEEDS,

MANUFACTURERS OF ALL DESCRIPTIONS OF

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CROLL'S DRY GAS-METER,

(Invented and Patented in 1844, since which time 200,000 of these Meters have been manufactured by Mr. CROLL,)

Obtained **PRIZE MEDALS** at the EXHIBITIONS of London, 1851, of New York, 1853, and Paris, 1855.

IMPROVED in 1858,

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"GOOD CONSTRUCTION and SOUND WORKMANSHIP."

Now manufactured by the GAS-METER COMPANY, LIMITED, KINGSLAND ROAD, LONDON; and, for the purpose of obtaining greater accuracy in all its parts, the most perfect machinery has been adopted, "By which the construction of the Meter is much simplified, while its liability to get out of order is diminished." (See report of T. G. BARLOW, Esq., C.E.)

ALEXANDER WRIGHT & CO.,

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MANUFACTURERS OF

COMPENSATING & OTHER WET & IMPROVED DRY GAS-METERS,

Of the best material and workmanship, carefully adjusted to meet the requirements of the SALES OF GAS ACT.

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STANDARD TEST GASHOLDERS;

Consumers' Governors; Inspectors' Pocket, King's, and all other kinds of Pressure-Gauges; Thermometers for Condensers, Pressure Registers, &c., &c.

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Employed by the best experimenters in this country and on the continent, and by the Gas Testers in the London districts.

PHOTOMETERS, SPECIFIC GRAVITY APPARATUS, BI-SULPHURET OF CARBON TEST, THOMPSON'S BROMINE AND HEATING POWER OF FUEL TESTS, IMPROVED ALKALIMETER, EXPERIMENTAL METERS AND GOVERNORS, MINUTE CLOCKS, &c., &c.

"ANALYSIS OF GAS FOR PRACTICAL MEN,"

New and Enlarged Edition, with "Gas-Meter Testing under Sales of Gas Act," p.p. 25 Stamps.

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GLASGOW;

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WROUGHT-IRON TUBES, FOR GAS, WATER, & STEAM; CAST-IRON RETORTS & PIPES,

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DOUBLE CONE, ALBERT, SHADOWLESS, & EVERY DESCRIPTION OF BURNER, UNION JETS, BATSWINGS, ETC.;

IMPROVED FULL-WAY CARTER'S VALVES (much approved of);

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